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OLMAN'S RURAL WORLD.

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OLDEST AGRICULTURAL AND LIVE STOCK JOURNAL IN THE MISSISSIPPI VALLEY

Sixty-Seventh Year.

ST. LOUIS, MO., AUGUST 6, 1914.

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IN THE POULTRY YARD

SUMMER CARE OF POULTRY.

Fowls will require very little feeding during the summer months especially if they have free range. But there are other things to be taken into consideration besides their feeding to obtain the best results from them. Too much stress cannot be laid upon the necessity of providing poultry with plenty of cool, fresh water. A serviceable home-made drinking fountain can be obtained by cutting a nick in the upper rim of a tomato can or other upright vessel and placing it inverted and filled with water in a shallow pan, also filled with water, sufficient to raise above the nick in the can. As the fowls drink the water from the pan more will flow out from the can or reservoir, where it is kept cool and clean. Buttermilk is one of the best summer drinks for laying hens and chickens, but should be free from salt. Sweet skim milk is also very valuable and possesses considerable food value. Boiled skim milk curds are excellent for young turkeys and chickens, says Indiana Farmer.

Either artificial or natural shade should be provided for all poultry to protect them from the burning sun. Sunflowers, shrubs and berry bushes are very useful for this purpose, or a clump of tall weeds may be left growing in a corner of the farm yard. This will afford a refuge from hawks and other birds of prey. An artificial shade, although less cool, possesses this advantage that it can be made rainproof as well as sunproof. Also it is well to provide fowls with charcoal and some grit and oyster shells. Many farmers give these in winter but in summer where the hens have free range they think that they do not need them. This is a mistaken idea and I always supply them with these articles the same in summer as in winter. A liberal supply of dust is also essential, since a good dust bath is a simple yet effective way to prevent lice from gaining a foothold in the poultry yard. Lice are not so much to be dreaded as mites which are the greatest pest in the poultry house. To prevent them from finding a lodging place in the poultry building, the roosts should be erected away from the walls on all sides and nests should be so constructed so that they can be taken out. These should all be occasionally whitewashed or sprayed with a good louse killer. Under the roosts I sprinkle plenty of lime and plaster.

Everything about the poultry should be kept clean and with good care to keep them comfortable and some good wholesome feed, plenty of green food, and free range, any farmer's flock should go through the summer in good condition, lay well and not die off, as is the case on many farms.

GETTING AFTER POULTRY DISEASE.

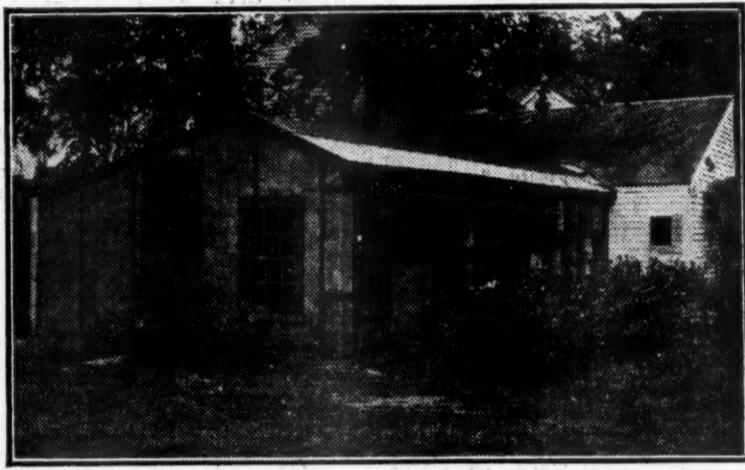
The white diarrhea testing work is now well under way. More than one thousand hens have been tested within the last 10 days at Greenwich, New Canaan, and Wallingford. Although the station is sure that the blood test is one of the best methods of arriving at eradication of white diarrhea, still it is continuing the experiments at Storrs in an effort to learn more about this disease that works such havoc among young chicks. The station has already used approximately 2000 chicks during the present season in its white diarrhea milk feeding experiments and will probably use 2000 more before the end of the summer. Since the station began this work some four or five years ago when little or nothing was known about the disease, it has used a grand total of between fifteen and twenty thousand chicks in its experiments with methods of controlling the disease and the value of milk for feeding. Since milk has been found so



valuable for chicks the station has undertaken similar work with hens and this is being done with the experimental pens in the egg laying contest.—W. F. Kirkpatrick, Professor of Poultry Husbandry, Connecticut Agricultural College.

CHEAP POULTRY FOOD.

Mr. Blatchley, in his report on the Orthoptera of Indiana, referring to turkeys as a remedy for grasshoppers, writes as follows: "Under the leadership of an experienced gobbler, almost their entire time during the



For Summer and Winter.

summer and fall months is spent in wandering over the fields and pastures in search of the fat and juicy nymphs of locusts, grasshoppers and crickets. Indeed, much of the luscious white and brown meat of our Thanksgiving and Christmas dinners was once grass, then grasshopper, and finally turkey. No better and more practical remedy can be devised, for the damage which the insects do is, especially in these days of 'turkey trusts,' often more than compensated by the value of the pounds of flesh which this domesticated fowl stores up from its favorite food of locusts." It is also a well known fact that guinea fowl are pre-eminent as grasshopper and insect destroyers. Our farmers seem to be unaware of their qualities in this line as well as of their value for the table. Every farm in Minnesota might have a flock of these guineas. The common domestic fowl is also an excellent destroyer of grasshoppers.

Feed young guineas the same as you would small chicks. A variety of suitable grains for guinea fowls is recommended. They are, corn, barley, oats, buckwheat and wheat; green food and grit, with plenty of fresh water.

Pullets and cockerels should be separated when eight or 10 weeks

old. The pullets must be kept growing and developed for early laying to bring the most profit. Early hatched pullets should begin laying when five or six months old. Unless the cockerels are of exceptionally fine stock they may be forced and sold as broilers or roasters and will often bring more per head in early summer than they would if kept until autumn. The chicks should be kept growing and developing from birth to sale or maturity to give satisfactory returns.

The Office of Experiment Stations of the Department of Agriculture has received a report of experiments made by the Mississippi Station in the feeding of hens. It was found that cottonseed meal used as the chief source of protein is palatable to fowls, and that when fed judiciously on it they will produce eggs; that hens fed on cotton-seed meal will produce eggs when eggs are highest in price; that as far as can be determined the general condition of the

cotton-seed meal-fed fowls seems just as good as the condition of those fed on beef scraps; that the tendency was to lose flesh and not get overfat, although the fowls were allowed access to the feed at all times; and that there is a good margin of profit from hens when given a properly balanced ration.

NOTES FROM EGYPT.

Editor Rural World:—We are still burning up, having had almost no rain for six weeks. A few days ago I crossed four counties, Richland, Jasper, Cumberland and Coles, and found the same condition in all. Pastures absolutely bare; meadows light; the earlier corn going fast. I have never seen so much late planting, and rain and a favorable fall may make a fair crop of this. Farmers and their wives are the most heroic class on earth. If one crop fails, he tries a catch crop. Oats have entirely failed here twice, but he will buy seed and sow again next spring. Then the farmer's wife—God bless her. On my trip I saw one on a mow, another on a cultivator; and a little girl 12 years old raked the hay on "Mapledale" farm.

Cattle and hogs have been sold off very closely.

We are ready to sow alfalfa as soon

as we get moisture enough, and intend to add some sweet clover.

Some think we cannot succeed with alfalfa here without tilling. I went down the railroad today to find some sweet clover soil with which to inoculate, but the right of way had burned over, and I could not find any.

I sowed some sweet clover in the garden and about one seed in a hundred had germinated.

Mr. Lyon has had a long vacation, and we hope to hear from him soon.

In one of my valued farm journals some of the correspondents continue to inflict "poetry" on us.

AGRICOLA.

SPRING FARM NOTES.

Editor Rural World:—I will write a few words of praise for the much abused state of Arkansas.

A great many people in other states think it would almost be a crime to live in our state, not knowing anything particular against it. But if they would inquire they would find out that Arkansas is a great deal better than it is generally represented to be. Of course it is rough here, but the land as a general thing is productive.

So many are prejudiced against this state they can hardly believe anything good about it when they hear it.

Every state has some drawback, Arkansas included, but a person wants to look for the good as well as the bad. I think good health, cold water and fine vegetables are worth a fortune, nearly. That is what we generally have on Spring Farm. We have two springs, one an iron spring, or iron water, rather, and one soft water spring that runs nearly all the time; also a well of cold water in the back yard.

I wish the women who write would all tell the name of their farms.

Say, I am a blue-back speller. I thought when my father came home with that spelling book I would graduate without any trouble. I guess that was one time I was mistaken. We had spelling schools last winter and everybody seemed to enjoy them.

Can any of you beat this: Mother of eight children, grandmother of seventeen, going to spelling school and taking part in spelling and enjoying it, too. Say, that was quite a feat for a grandma—was it not? That was your unworthy writer from Spring Farm.

SARAH L. SPEARS.

Redstar, Ark.

STRAWBERRY COCKTAIL.

Mash one pint of strawberries, add two cups of water and one cup of sugar, the juice of half an orange and half a lemon. Stir well and set on the ice for two hours to chill. Just before serving, strain through a jelly bag and add sherry to taste. Put sliced berries in glasses and pour over them the above dressing.

The silo and good dairy stock are two mighty good levers to use in paying a mortgage off a farm.

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CREAM of the DAIRY NEWS

WHAT MAKES MILK AND BUTTER YELLOW.

That the rich yellow color demanded by the public in dairy products is primarily due to the character of the cow's feed is demonstrated by recent experiments carried on by the department in co-operation with the Missouri State Experiment Station. For some years dairy experts have been studying this question. Their conclusion is that, although to some extent a breed characteristic, the intensity of this yellow color may, within certain limits, be increased or diminished at will by changing the animal's ration.

Chemical tests show that the yellow pigment in milk consists of several well-known pigments found in green plants. Of these the principal one is carotin, so called because it constitutes a large part of the coloring matter of carrots. The other yellow pigments in the milk are known as xanthophylls. These are found in a number of plants including grass, but are especially abundant in yellow autumn leaves.

These pigments pass directly from the feed into the milk. This explains the well-known fact that fresh, green grass and carrots increase the yellowness of butter, the only standard by which the average person judges its richness. On the other hand, a large proportion of these pigments is deposited in the body fat and elsewhere in the cow. When the ration is changed to one containing fewer carotin and xanthophyll constituents, this hoarded store is gradually drawn upon and in consequence the yellowness of the milk does not diminish so rapidly as it otherwise would. This yellowness increases, however, the instant the necessary plant pigments are restored to the ration.

Green grass is probably richer in carotin than any other dairy feed. Cows fed on it will therefore produce the highest colored butter. Green corn, in which xanthophylls constitute the chief pigment, will also produce a highly-colored product. On the other hand, a ration of bleached clover hay and yellow corn is practically devoid of yellow pigments and the milk from cows fed upon it will gradually lose its color. It is, of course, indisputably true that the breed does influence the color of the milk fat; but vary the ration and there will be a corresponding variation in the color of the milk fat in each breed.

In cows of the Jersey and Guernsey breeds the body fat is frequently of such a deep yellow color that some butchers and consumers look with disfavor upon beef from these breeds. For this prejudice there is absolutely no justification. The yellowness of the fat springs from the same causes as the yellowness of the milk fat, and there is no reason for objecting in one case to the very thing that is prized in the other.

SOUR SKIM MILK FOR CALVES.

That in summer time calves do as well on sour skim milk as they do on sweet will be interesting news to many farmers who have hitherto been kept from raising calves by the expense of keeping the milk sweet in hot weather. This expense experiments carried out by the department indicate to be quite unnecessary. The calves will make as rapid gains on sour milk. In winter, it is true, this is not quite so satisfactory. It chills the calves and some of them drink it with great reluctance. Very young calves have even been known to refuse it altogether. On the other hand, of course, it is much easier to keep the milk sweet in winter.

In calling the attention of farmers to these facts, however, the department at the same time emphasizes an important precaution. Unless the milk is produced and kept under cleanly conditions, it may become contaminated with disease-producing bacteria. Farmers should therefore allow the milk to sour quickly and then feed it without delay.

In the course of these experiments



sour skim milk was fed to 22 calves, Holsteins, Jerseys, and Guernseys, at different seasons of the year. In no case did it cause digestive disturbances, even when the change from sweet to sour milk was made abruptly when the calves were only a few days old. Moreover, no evil results followed the alternate use of sweet and sour. It seems, therefore, that the common idea that sour milk leads to scours is quite unfounded.

The calves, it was found, did not like the sour milk as well as the sweet, but in the majority of cases soon became accustomed to it. The aversion, however, increased when the milk was fed them at a low temperature.

ICE CREAM MAKING IN THE HOME

It was but a few years ago that ice cream was considered a luxury. On account of its delicate flavors and refreshing qualities people nowadays find it hard to resist ice cream, and it is becoming a common article of diet for the poor as well as the rich. It is well that it should be so for ice cream not only possesses wonderful pleasure giving properties but it is also a most desirable and nourishing form of food. It is because of this that ice cream has become such a boon to the invalid and the convalescent.

The kinds of ice cream and ices most commonly made on a small scale in the home are the plain ice cream, the plain ice cream with eggs added sometimes known as French or Neapolitan, fruit ice cream and milk and water ices.

The following is a good recipe for one gallon of plain ice cream 2 1/2 quarts of 18 per cent cream, 12 ounces of sugar, 1 tablespoon of granulated gelatine, 1 tablespoon of anilina. Cream raised in Cooley cans will contain about 18 per cent fat and richer separator cream may be diluted with milk. The gelatine is used as a binder, giving the ice cream a smooth texture and an increased stability. Dissolve the gelatine in a little warm milk or water and mix it with the other ingredients in the freezing can, stirring well to dissolve the sugar.

The quality and palatability of ice cream as well as the profit in its manufacture are dependent largely upon the amount of air whipped into the cream during the freezing process. This makes what is known as the "swell" or the amount of finished product over and above the cream mixture. The main point to observe in obtaining a big "swell" is to use cream which has been held at least 24 hours at a low temperature. This is because old cream will whip up better than fresh cream and it also has a heavier, smoother body than fresh cream.

Having prepared the "mix" in the freezing pan the can is set in the freezing tub and the tub filled half full of ice. A layer of coarse, fine, or ground rock salt is now added and then alternate layers of ice and salt until the tub is full. In all use one part of salt to 10 or 12 parts of ice. Add a little water to the salt and ice so as to hasten the formation of brine and thus intensify the freezing process. If the cream mixture is warm when it is put in the freezer let it stand a few minutes, turning the crank slowly at frequent intervals. This will cool the "mix" down and prevent the formation of butter granules.

The crank should be turned slowly until it begins to turn a little hard when it should be turned at high

speed. This is for the reason that when the mixture is being cooled from about 32 degrees F. to 28 degrees F. the maximum amount of air can be whipped into it. It will be necessary during the freezing process to add more salt and ice and to draw off some of the brine. The freezing process should cease when the cream has a thick, stiff consistency. If the process is carried on longer the air which has been whipped into the cream will have been whipped out and the "swell" reduced. In making ice cream on a small scale it is not necessary to use a separate packing can. The dasher is removed when the freezing is done and the hole in the cover stoppered. The brine is drawn off and the ice and salt tamped in firmly around the can until the can is covered.—H. F. Judkins, Dairy Department, Conn. Agt. College.

CANCERS.

Editor Rural World:—I was very much interested in "Delay in Cancers" in the last issue of this paper.

A bit of personal experience may benefit some one.

Several years ago on going into a dimly lighted room, I struck my cheek against a sharp corner and bruised it severely. We used home treatment and gave it little attention for some time, only to notice that it refused to heal.

Finally I went to our family physician and he burned it several times. It would almost heal and then break out again. This continued for more than a year without benefit. At the

urgent request of my wife (bless her, she is nearly always right), I went to the most skillful surgeon in our region. He gave it a long Latin name and then said in plain English "It's a skin cancer, and I will not treat it except to remove it."

"This he did without pain, using only a local anaesthetic, and the operation was entirely successful.

When I asked his charge he said "ten dollars, but if you had waited till it spread all over your face it would have been \$150."

He then told me that a woman who had waited too long came to him a few days before for treatment, but he told her it was too late.

My friend, if you have a sore that will not heal, go to a surgeon of known ability, and go at once.

AGRICOLA.

Sometimes it is necessary to load a critter onto a wagon when there is no arrangement handy for doing the work. Dig two sloping trenches in the ground deep enough that when the hind wheels are backed into them the wagon box will be close to the ground. Then drive the critter into the box and tie it and the trick is done.

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Cattle

BEEF PRODUCTION IN THE SOUTH

By W. F. Ward, Senior Animal Husbandman in Beef Cattle Investigations, Animal Husbandry Division, and Dan T. Gray, Chief of the Animal Industry Division of the North Carolina Experiment Station.

There is no section of the country which can produce cattle more cheaply than the South, for the lands are still cheap, the grazing is good, the pasture season is long, feed can be produced at a minimum cost, and inexpensive shelter only is required for the animals during the winter months. The native cattle throughout this section are poor in quality and small in size, but they are also cheap in price. They are not worthless, however, and their cheapness is their redeeming feature, for they are good foundation stock from which may be produced an excellent herd of beef animals by judicious selection and by the continued use of purebred beef bulls.

Cheap lands combined with cheap cows for foundation stock make it possible to start in the cattle business in the South with an outlay of far less capital than in most other sections of the country. Then, too, expensive barns are unnecessary for beef cattle in the South; the only shelters needed are open sheds facing south, under which young cattle may take shelter from cold rain or wind. Mature beef cattle usually need no other protection than that afforded by trees, hedges, underbrush, canebrakes, and other natural shelters.

Pasture Lands and Grasses.

Of the total land area of the South, 73.1 per cent is made up of grazing land, woods, or waste lands, and a very large portion of the latter would produce excellent pasture for cattle. The types of soil and the nature of the land vary widely in each state, but in each one are found soils which produce abundant grazing. The stiffer soils usually produce better grazing and fatter cattle than do the light or sandy soils. The lime lands, black prairie lands, and alluvial lands furnish the best pastures.

The natural grasses of the coastal region of the South are Bermuda, carpet grass, and lespedeza. Bur clover should be planted on the sod. If pasture grasses are planted, some Italian rye grass should be planted with the other seed, as this grass will grow rapidly and furnish early spring grazing before the other grasses get started. On the sandy coast lands it furnishes good pasture the latter part of the winter, surpassing rye for this purpose. A mixture of redtop and alsike clover should be planted on the wet lands.

That portion of the South which lies between the coastal region and the Piedmont region may be called the upland section. There Bermuda, lespedeza, carpet grass, and crab grass are the most important natural grazing plants. Redtop, orchard grass, paspalum, alsike clover, bur clover, white clover, and tall oat grass may be planted for grazing purposes. If the soil is damp, as creek bottom land, alsike, redtop, and paspalum will do well. The sod of paspalum should be planted, as the seed are scarce and but a small percentage of them germinate. If there is much lime in the soil the clovers will grow readily.

In the Piedmont region the principal permanent grasses are blue grass and white clover. On the uplands of this section a mixture of orchard grass, tall oat grass, and alsike clover may be planted for pasture purposes and give very satisfactory grazing. Sometimes red clover is planted with other grasses where the land is to be grazed but two or three years before put into cultivation. Red clover or red clover and timothy are sometimes planted for hay, and after cutting the first year are grazed the second year, after which the land may be planted to other crops. Redtop is often sown on the damp lands and, combined with the white clover which usually grows on such lands, furnishes good grazing.

Johnson grass is usually found on the black prairie lands and the lime lands of Alabama and Mississippi.

This furnishes good grazing for one or two years, after which it is necessary to plow the land to get it well started again. Melilotus, or "sweet clover," is quite generally sown on the Johnson-grass land for pasture purposes and gives good grazing for two years. A combination of melilotus, bur clover, white clover Johnson grass, and lespedeza furnishes excellent grazing for nine months of the year. As melilotus will grow on poor lime soils which may be but a few inches deep, it is the most valuable plant to sow for pasture on such soils. On damp prairie soils alike clover, paspalum, and white clover grow well.

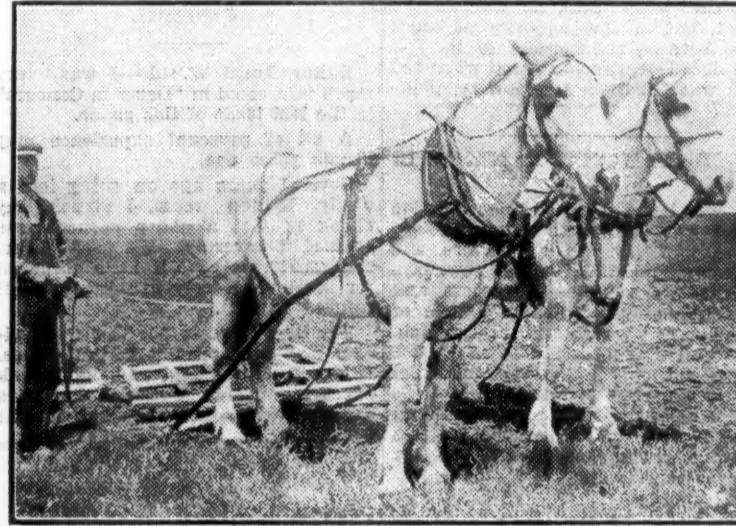
KEEP THE BABY FAT ON YOUR BABY BEEVES.

Contestants in the Texas Industrial Congress who are trying for the prize for the best baby beef should remember that the term "Baby Beef" applies to more than the actual age of the animal, and really means that the beef of which the animal is composed is the beef with which it was supplemented by what flesh it has

thereon, so it will be necessary, just as with the milk, to supplement them with a concentrated ration. The one suggested above in the proportion of two parts corn meal, two of bran and one of cotton-seed meal will be found about as good as can be used. If you are short of green feed, then watch the bowels and keep them moderately open by the addition of a little flax seed meal to the ration once or twice a week. Never give the animal more feed than he will lick up clean at each meal and be sure to keep the feeding trough clean and sweet. If you have a small amount of milk, it might be well to wet the feed with it. In the absence of milk, it is not a bad idea to wet the feed with water, making it into a rather thin dough, but in this instance extra care must be taken to clean the vessel from which it is fed.—Bulletin No. 10, Texas Industrial Congress.

REMEDIAL MEASURES FOR WHEAT PEST.

The little insect that causes an annual loss in this country of thousands of bushels of wheat and known as the



Careful Preparation is Part of the Secret.

manufactured from the feed given it. So the first essential to success in the making of baby beef is to see that the animal is born with an abundance of fat and the only way to do this is by taking proper care of the mother before the calf is born. After the birth of the calf, however, every energy should be bent towards retaining as much of the baby fat as possible, and this can only be done by feeding the calf the most succulent and nourishing foods. Of course the food above all other best suited for the calf and the production of baby beef is milk. The more of this article that can be fed the calf, the better will he retain his original fat, and the faster will he put on new fat. So well recognized is this fact that the professional feeder who is fitting a baby beef for the market will frequently have extra cows in milk, and the only use to which this extra milk is put is to feed the baby beevs.

We have in mind a grade Galloway calf that we once saw who at a few days less than a year old tipped the scales at a thousand pounds and that just missed winning the world's prize for the best baby beef at the Chicago Fat Stock Show. This calf had two splendid Holstein cows as foster mothers, and was allowed to run with them and to consume all the milk they produced. In addition to the milk, he was fed a liberal ration of corn meal, wheat bran and cotton-seed meal, and was never allowed to go hungry one minute. At the same time, care was taken not to overdo the thing, and he was given at each feed just a little less than he would lick up clean.

In the absence of milk, it must be remembered that baby beef and baby fat can only be retained by an abundance of succulent foods. For this reason, the calf must at all times receive an abundance of green, tender feedstuffs. Of course the legumes and green corn, fed carefully, will be our chief dependence for these, but care must be taken not to overdo this. At the same time, it will be impossible for the calf to eat enough of these materials to make the maximum gains

"oat aphis," can scarcely be controlled when once it has gained headway. By proper precautions, however, serious outbreaks can be prevented. This insect often escapes notice, but it is probably the most widely distributed of the important plant-lice which attack wheat and oats, and its depredations are only exceeded by the so-called "green bug." How the oat aphis may be combated by a destruction of its breeding place, by cultural methods, and by spraying is outlined in bulletin No. 112, shortly to be issued by the U. S. Department of Agriculture.

As the oat aphis does not ordinarily appear suddenly in great swarms as does the "green bug," it has never been considered a pest of great importance. It is easily overlooked by the casual observer, especially in the fall when it occurs at the base of the plants and on the roots. However, it is usually always present on the wheat and observations lead investigators to consider that these parasites weaken the plants and decrease the yield to an important extent, even though they may not be conspicuous, and the decrease in yield not enough to be recognizable as in the case of the "green bug."

Pictures of the pest and detailed description of its appearance are found in the new bulletin. The adult wingless insect is about the size of a pin head and is yellowish green to olive green in color. The winged insect has a black head, the abdomen being green and the antennae black. The eggs are laid in crevices of the bark or between the leaf bud and twig of the apple and when first deposited are pale greenish in color. They soon change, however, to a shining black and retain this color until they hatch in the spring.

Life History of the Insect.

The oat aphis occurs on grains and grasses throughout the summer. The eggs are laid but once a year, in the fall. In the spring the eggs hatch, and throughout the summer there are 16 or more generations produced, all females. The last generation in the fall contains both males and females. As the weather becomes cooler some of

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the females seek the lower parts or roots of wheat and other plants of the grass family and here pass the winter, or the winged insects coming from the grain may seek such trees as the apple, the egg-laying females of this generation in turn depositing eggs on the twigs and branches.

Mild winters and cool springs seem most conducive to the increase of this pest. The oat aphis multiplies rapidly when the temperature varies between 40 and 56 degrees F.

Destroy Breeding Place of Oat Aphis.

The little wheat pest thrives best in rank-growing grain as in spots where manure piles or straw stacks have stood. These places are usually the center of infestation and the lice may be found there even during the winter. Therefore the volunteer growth of wheat that occurs in the vicinity of straw stacks or manure piles should be plowed under or otherwise destroyed late in the fall in order to destroy the plant lice breeding thereon. In some cases it may be desirable to destroy this vegetation even earlier; that is, before the winter wheat is planted or at least before it makes any growth above ground.

The pasturing of cattle in wheat and oat fields in Oklahoma and Texas during the late fall or early winter has proved a desirable method of destroying the breeding places of the pest.

Cultural Methods.

As in the case of many other rain pests, crop rotation is of much importance in the control of this aphis. Wheat fields should be located as far from the previous year's grain fields as possible, and especially should they be planted some distance from standing straw stacks. It is also advisable to plant grain as far as possible from apple and other trees, which harbor the insect during the fall, winter, and spring months.

Spraying.

Direct applications are hardly practicable in grain fields, but where only small areas are badly infested, spraying with blackleaf-40 at the rate of one part of this insecticide to 900 parts of water, plus one pound of soap to each 100 gallons of spray liquid, will doubtless prove efficacious, providing the application is thorough.

Another method which might be adopted in localities where the aphides freely migrate and deposit eggs on apple, is spraying such trees early in spring before the eggs hatch, preferably just previous to their hatching and while the trees are yet in a dormant condition, with commercial lime-sulphur mixture at the rate of one part of the mixture to eight parts of water.

The above remedial and preventive measures for this destructive parasite are all the more important because there is little hope of controlling it after it has once gained much headway and because, being so inconspicuous, it is liable to become present in great numbers before it is noticed.

A short crop is all right in its way—only it doesn't weigh enough.

Weekly Market Report

Cattle and Hogs Lower—Prices Break Near Noon and Market is Demoralized Thereafter.

CATTLE—The beef steer supply moderate, and included only a small run of strictly good grades. The market opened on a strong basis, with a good demand. The light supply was much in favor of sellers, and, as a consequence, higher prices were asked for. In most cases above \$9.25 it was a strong deal, and active. Below that mark, however, the market was inclined to be somewhat irregular, being strong in most cases, but there were some weak spots. This condition continued up till noon, when packers withdrew from the market and refused to even bid on cattle. Consequently there was nothing doing after the middle of the day, or when sellers cut loose it was at large declines, one instance of steers at \$8.25 being exactly the same kind of stuff that brought \$8.75 late last week.

Heifers sold strong early in the day, with some instances of 10@15c higher prices, particularly on strictly good classes. Again, though, there was evidence of irregularity on medium classes, some looking strong, while others were slightly lower. The big break came shortly after noon, when buyers withdrew and refused to look at cattle unless large discounts were granted. As a consequence there was a lot of cattle unsold at a late hour.

Stockers and feeders reflected little change from last week in most cases, as while the demand was not heavy, a small supply enabled sellers to keep prices pretty close to steady. It was difficult to gauge the late market, because it was so uneven. However, sellers found it mighty hard going, as in some cases buyers absolutely refused to even make a bid.

The quarantine supply was estimated at 73 cars. While most of the showing was from Texas and Oklahoma, yet canner territory was also fairly well represented. The market opened on an extremely slow basis. A few loads sold early and looked weak, although the sellers claimed they were close to steady with last week. Because of the number of them, however, they could hardly be taken as a criterion of the market. Later on it became somewhat difficult to move the steers at any kind of prices. The market in most cases was a flat quarter lower.

HOGS—There was but a small supply, but the market was on a lower basis. Some sales were made early that were not more than 5c lower than the Saturday basis, but later there were still further declines. Shippers and city butchers were fairly good buyers, but packers were in one of the worst moods they have been in for a long time.

Regular packers did not purchase any hogs at all, but talked about wanting them 50c to \$1 lower, which proposition sellers refused to entertain at all. Packers were talking about \$8 for good hogs and claimed that they were purchasing them on that basis at other markets and that unless they could get them down here they would let some one else do the buying.

The top of the market was \$8.90, while the bulk of the good hogs went at \$8.00@8.80. Not many hogs were carried over, as the supply was so light that shippers and butchers cleaned them up pretty well. By the middle of the forenoon the market was demoralized and did not recover any whatever later, so that the close

was in very bad shape from every point of view.

Good smooth hogs that were not too heavy sold at \$8.85 and up to the top of the market, while the mixed and heavier grades went at \$8.50@8.80 and the rough heavy sows and stags \$7.90@8.10. Best grade of pigs and lights sold at \$8.65@8.90, fair offerings went at \$8@8.50 and the common kinds at \$7@7.90, with some of the real com-mon ones still lower.

SHEEP—There was but a small supply of sheep and lambs and as there was a good demand the market was on an active basis. Best grade of lambs was slightly higher, but others and sheep were not any better than steady. Breeding ewes of the right type were in good demand and sold on a much better basis than any time last week, or for that matter, any time during the past several weeks.

The good lambs sold at \$7.90@8.05, the latter price being the highest price of the day, while the medium grades went at \$7.25@7.75 and the culs went at \$5.50@7.00, according to quality. Buyers were quite anxious for the good fat lambs and all offered went in a hurry and at the best prices for two weeks or more.

Mutton sheep sold on a steady basis, that is the good medium-weight kinds went at \$4.50 and the choppers and heavy ewes \$4 or but little better, while good stockers sold at \$3.35@3.90 and the fair stockers \$2.50@3.25. Breeding ewes of fair quality sold at \$4.50@4.75 and the strictly good kinds \$5@5.35. The demand for breeding ewes was much better than last week or the week before. Bucks sold at \$3.25, which is the same as last week.

HORSES—Southern buyers were not overly plentiful and not a very strong trade was staged on these kinds. The majority of the offerings finding outlets through Eastern ports. Atlantic sea board states were the sections furnishing the majority of buyers and anything that was on the quality order and suitable to this section found little trouble in getting an outlet satisfactory to shippers. Chunks, drafters and good work animals were the kinds wanted and these sold as good as to be expected for this period of the year.

MULES—While there is a slow draggy trade at present there has been no material change in values and about the usual type of a midsummer market is being staged.

THE MULE-FOOT HOG.

We see a great deal of advertising in agricultural papers today about the mule-foot hog as an animal naturally immune to hog cholera. Since cholera has been making such ravages during the past year, such advertising undoubtedly sells stock to people who do not acquaint themselves with the facts of the case.

We are indeed fortunate that experiments have been carried on, the results of which show absolutely that the mule-foot hog is just as susceptible to cholera as any other breed of swine. In every case where the mule-foot has been exposed to cholera or injected with virus in those experiments, the results were disastrous.

It seems strange that in this day of publicity that such advertisements should be allowed to mislead the unsuspecting public and thereby rob them of their cash. As far as the mule-foot hog is concerned, the longer it remains a curiosity for the sideshow, the better for our swine industry, as it has nothing to recommend it over our recognized breeds, not even its freak foot.

H. E. DVORACHEK,
Colorado Agricultural College.

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Terms:—A reasonable cash payment, balance to suit. Weber Implement and Automobile Company, 1900 Locust street, St. Louis, Mo. Only four blocks North of Union Station.

Junior Dan Patch, 2:05 1/2, by the records the fastest son of Dan Patch, 1:55 1/4, was sold by W. J. McDonald, the well-known Boston horseman, to J. F. Elwell, of Minneapolis last week. What Mr. Elwell intends to do with the stallion could not be ascertained, but, as he bred Junior, it is possible that he will use him for breeding purposes. Junior Dan Patch is ten years old and has been used by Mr. McDonald in the matinees of the Metropolitan Driving Club this spring.—Horse Breeder.

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Once you have purchased and laid Edwards Tightcote Galvanized Steel Roofing your roofing expense for that building is at an end for all time. Its cost per square is the lowest ever made. Has no up-keep cost. Property protection absolute. Its service, as long as building stands. Always beautiful in appearance. **Guaranteed Fire-proof, and Lightning-Proof.** Reducing the cost of your fire insurance.

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Steel Shingles

Edwards "Grip Lock" Patented

Spanish Metal Tile

Edwards Exclusive Tightcote Process Makes Rust-Proof Roofing

The Edwards process of galvanizing makes the zinc spelter practically one piece with the steel. No ordinary galvanizing can compare with it. Each and every Edwards Metal Shingle, Metal Spanish Tile, each sheet of Edwards Reo Steel Shingles, Grip Lock Roofing, Pressed Standing Seam or Roll Roofing is dipped in a bath of molten zinc, one at a time after the metal has been stamped and required. This assures a uniformity. The edges are galvanized as heavily as the sides. Not the space of a pin-point on the steel is exposed to rain, snow, frost, acids or anything that destroys a steel roof.

How To Test Galvanizing

Take a piece of any other galvanized steel, bend it back and forth several times, hammering it down each time. You will then be able to flake off great scales of the galvanizing with the finger nail. Apply this test to a piece of Edwards Tightcote Galvanized Steel Roofing—you'll find no flaking—not a space on the metal the size of a pin point exposed to rust.

Edwards Patent Interlocking Device Prevents Warping, Buckling or Breaking, Protects Nail Holes —They Can't Leak or Rust

This device not only takes care of expansion and contraction so that an EDWARDS Steel Roof never warps, buckles or breaks, but it is so designed that nails are driven through the under layer of metal only—nail holes are protected from exposure—cannot rust. No special tools or experience needed to lay it—any one can do the work—lay over old shingles if you wish.

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The Pig Pen

ARTICHOKE FOR PIGS.

Much has been written on the subject of the food value of Jerusalem artichokes, but few careful experiments have been made to determine just what proportion of rations for farm animals may be profitably made up of these tubers. To throw light on this point, the Oregon station fed six thrifty Berkshire pigs, which had been running on wheat stubble and weighed 117 to 215 pounds at the beginning of the experiment, from October 22 to December 11 on artichokes, supplemented by a small ration of equal parts of chopped wheat and oats.

An effort was made at the outset to compel the pigs to subsist on a diet of artichokes alone; but in the absence of grain there was very little gain, and the pigs were not contented. They were vigorous in their demands for something more substantial.

The artichokes were grown near the pens, so that the pigs could have access to them whenever they desired. The tubers were left in the ground for the pigs to root out as they were needed. A portion of the plant was measured, and the artichokes dug to determine the yield, which was found to be 740 bushels per acre.

During the experiment the six pigs consumed the artichokes grown on one-eighth acre and made a total gain in live weight of 244 pounds, or an average daily gain per pig of 0.81 pound. The pigs consumed during the period 756 pounds of grain, or at the rate of 3.1 pounds of grain for each pound of gain in live weight.

In other experiments it has been found that it requires about five pounds of mixed grain for each pound of gain in live weight. On this basis the feeding of the artichokes resulted in a saving of nearly two pounds of grain for each pound of gain in live weight. The pigs were healthy and vigorous throughout the experiment.

The artichokes used in this experiment were planted the last of April, on ground plowed deeply and prepared as one would prepare ground for potatoes. The tubers were planted in furrows which were three feet apart.

The seed was dropped 18 inches apart in the row and covered with a hoe. The plants were cultivated a few times, but after the tops were two feet high, no further cultivation was necessary. The tops grew seven feet high before the end of the season. The pigs left only a few tubers in the ground.

GIVE YOUR PIGS MATERIAL OF WHICH TO BUILD BONE AND MUSCLE.

Those contestants of the prizes offered for the best pig must remember that the pig should be fed the materials it will need for the building of bone and muscle. Many people believe that they cannot raise and develop a pig unless by feeding plenty of corn. As a matter of fact corn is the least important food in the growing of a pig, and pigs fed upon corn alone never develop and make as good animals as those that have been more intelligently fed. Corn is purely a fattening ration.

Before the pig is fattened it should have a good development of bone and muscle which enables it to carry fat. The chief materials used in the building of bone and muscle are lime and a material known as protein. Protein is a combination of nitrogen and other materials, so in order that our pig may have enough bone and muscle we must see to it that the ration contains an abundance of protein. Protein is supplied more abundantly by the legumes than by any other class of plants, so a large portion of the feed given the growing pig should consist of this class of plants. If we are short in our supply of protein-bearing plants, the deficiency can in part be made up by the use of what is known as flesh meal.

Flesh meal is really dried products of the packing houses, and as it is derived from animals of course it contains a large amount of protein. About the cheapest source of protein for pigs, however, is skimmed milk, and the

contestant who has a plenty of skimmed milk to feed his pig will stand a mighty good chance of earning some of the prizes.

Where the protein crops are being raised it will be hard to find better plants for supplying this material than the cowpeas and peanuts. About the cheapest and best way of feeding peas and peanuts is to allow the pigs to run on them after they begin to reach maturity and do their own gathering. In fact, since one of the conditions of earning a prize includes the cost of production, it will be found of very material advantage to allow the pigs to gather as much of the food they consume as possible. Not only will it reduce the cost but at the same time the pig will be benefitted by the exercise. At the same time it is well, if you desire to push the pigs, also to feed them some grain feed, or "concentrate" as the professional calls it. Probably there can be no better food for this purpose than one composed of about 10 parts of corn meal and one part of tankage.

If you haven't the tankage, use two to three parts of peas in its place. For the last 40 days of the feeding, nothing will be found better than cotton seed meal, given in about the same proportion as you would the peas. It will not be well, however, to use meal too long, as it sometimes causes trouble.

The sheep of the corn-belt have been especially troubled with parasites.

The Shepherd

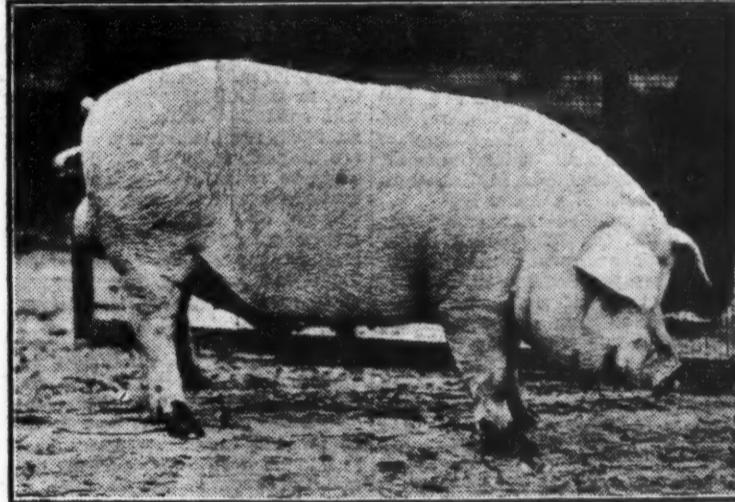
SELECTION OF BREEDERS.

Selecting the breeding stock is the most important operation in establishing the flock. It would be a much simpler problem if the visible qualities, such as form, were the only ones concerned, but such is not the case, fecundity and good milking qualities, are equally important.

Too much attention can not be given to this phase of selection. Upon success or failure of proper selection depends the advance or retardation of the flock. The old adage, "Well begun is half done," was never more appropriate than here.

It is necessary to pay special attention to the health of the breeding animals. Sheep are effected with so many diseases and parasites that extreme care must be exercised to select individuals free from these troubles.

The sheep of the corn-belt have been especially troubled with parasites. It is because of the comparative freedom of the range from these pests, and the consequent vigor and robustness of western sheep, that this class of sheep are particularly desirable for breeding purposes.



Prize Chester White Boar.

Above all things keep the hogs clean, not only as to themselves, but in their surroundings, and be particular to see that all food given them is sound. Feed all they will consume, but be careful to see that there is nothing left over to sour and decay, and keep their feeding troughs clean and sweet. At all times see that the pigs have an abundance of fresh water.—Texas Industrial Congress, Bulletin No. 9.

RANGE FOR SWINE.

The hog must have range of pasture, so that he will get plenty of exercise and of succulent, muscle-forming food, from which he can build up good, strong bone and frame. These things are very essential with brood sows. The foundation of economical hog-growing is, first, to fence the entire farm, and the large pastures and fields, hog tight.

This helps to make better relations between neighbors, as you can keep your hogs on your own land. Clover makes the ideal hog pasture. It grows early in the spring and late in the fall. In any locality, alsike clover is good. It does not grow quite so large and rank as red clover. The hogs relish it, as they do all clover.

As a preventive of stomach worms in the spring soon after the lambing period the old sheep should all receive a one or two ounce dose of gasoline, followed by a small dose of epsom salts. They should then be turned on a worm-free pasture, if possible. In July the entire herd, including the lambs, should be treated with gasoline and turned into a new pasture. This treatment should be repeated in November, when the flock should again be removed to new pastures. Pasture rotation combined with drugs that are injurious to the worms is the most practical method of successfully combatting this worm.

With purebreds there are certain breed characteristics that must have due consideration. These may or may not be of value in themselves, but they are important in that they indicate purity of blood, which blood contains unquestionably superior qualities.

The different breeds are all undergoing more or less change. Part of this is actual improvement, and part of it is fashion. It is desirable that the breeder of purebred sheep keep up to date in his selection, avoiding "offtype" sheep.

He should do this whenever the newly desired qualities do not interfere with the usefulness or value of the sheep; but where constitution, utility or some other such quality must be sacrificed to fashion, it should be avoided, and more progress will be made in the end. The most improved and at the same time the most up-to-date type should be selected.

With purebred stock it is desirable, if possible, to select all the ewes from the flock of one reliable breeder. More uniformity, both in the ewes themselves and in the lambs, may thus be secured.

The purchaser should make it a point to see the stock before buying. If this is impossible, the stock should be shipped subject to approval. Many breeders' show flocks are comprised of purchased or imported sheep of high quality, while their breeding flocks are of a very mediocre character.—Professors E. L. Shaw and L. L. Heller in Bulletin 20.

AGE OF BREEDING EWES.

At the Wisconsin station, says Professor E. L. Shaw, it was found that ewes six years of age produce a higher percentage of lambs than the younger ones, but ewes this old usually have broken mouths and are not generally desirable on that account.

POLAND CHINAS Spring Pigs & Bred Gilts of the biggest type & highest quality. Also Angus Cattle. J. P. V. serving, Box 9, Alton, Ill.



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Some general rules are worth considering on this subject. Ewe lambs are not satisfactory for breeding. With the ram lambs the amount of service may be regulated, but with the ewe lamb that is bred the entire burden of maternity must be borne, as it can not be controlled.

An English experiment showed that ewe lambs bred at seven months, when producing and rearing a lamb, were stunted to the extent of seventeen pounds, compared with those bred at one year and seven months. During the second year of the experiment the difference was lessened, but did not disappear.

Ewes should not be bred before eighteen months old, and this is the common practice in this country. In founding a flock it is better to select ewes that have produced lambs. They have less trouble in lambing, and something may be told of their breeding qualities.

FIGHTING CABBAGE WORMS.

White butterflies will soon be laying eggs on cabbages. A few days later the little green worms will appear, and soon the leaves will be dotted with holes and disfigured with the worm droppings. The only way to prevent the trouble is to poison the worms.

A good spray mixture is made by dissolving one-half pound of laundry soap and a pound of arsenate of lead in 20 gallons of water. Put this on so that the leaves are completely covered. A mouthful of arsenate of lead will kill any cabbage worm that ever lived. The soap is added to the mixture so that it will spread over the leaves more evenly.

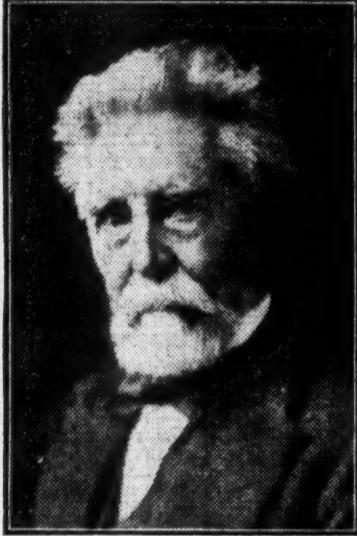
The brood sow needs to grow a strong and healthy litter; protein and ash should therefore be prominent factors in her feed, young ones requiring a higher proportion of these substances than old ones. A sole corn diet lacks in protein and ash and for that reason tends toward small litters and weak boned pigs. Furthermore, corn is heating and leads to laying on of fat, both of which are detrimental to best results from breeding animals. A ration that may be recommended for the sow is equal parts ground corn, ground oats and wheat middlings. The proportion of corn should not be over one-third of the meal ration and wheat middlings or bran may be used to dilute the corn meal without oats. In cold weather if the sows have a good deal of outdoor exercise, they may be fed more corn with safety than when they must be kept pretty closely confined. An especially good grain ration is one that leaves out corn altogether, namely equal parts of ground oats and middlings.

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Norman J. Colman,
First U. S. Secretary of Agriculture.

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The appalling calamity of a European war with six or more great powers involved cannot be computed. No nation is willing to assume responsibility for the first shot.

The great value of alfalfa as a feeding stuff, especially in the western and southern states, is well understood. This has been established by long practical experience and by the scientific investigations of a number of the experiment stations.

A better system of farm credits, by which the farm borrower and the farm lender can be brought together on moderate terms, by which the cost of the middleman can be eliminated, by which a farm mortgage can be made an investment security as safe, available and readily convertible as a railway mortgage bond, and by which a farm borrower can obtain money at reasonable rates with which to improve his farms, or with which to buy more land, is badly needed.

One of the experts who have been making clover investigations for the United States department of agriculture suggests that sweet clover should be pastured early. He says that the principal drawback to sweet clover as pasture is the rather bitter taste, and that, if cattle are turned on the field very early in the spring, they will get in the habit of eating it when it is young and has little of this taste, and

will thus quickly acquire the appetite for it.

HOME CLASSES IN PRACTICAL FARMING AND DOMESTIC SCIENCE.

A plan whereby ten or more farmers or farm women can form home classes in agriculture or domestic science and receive the textbooks, lectures, lantern slides, laboratory and cooking equipment necessary to conduct them has been devised by the United States Department of Agriculture in co-operation with agricultural colleges of certain states.

The object of the plan is to make accessible at home, to men and women who have not the time or means to attend the regular courses at the colleges, practical short courses in agriculture and home management specially adapted to their districts. These courses, which will consist of 15 to 20 lectures, and will consume five or more weeks, can be arranged to suit the spare time and convenience of each group of people.

The courses to be offered at first are poultry raising, fruit growing, soils, cheese manufacturing, dairying, butter making, and farm bookkeeping; and for the women especially, courses in the preparation, cooking and use of vegetable and cereal foods. The department will supply lectures and lantern slides covering these subjects, and the states which have agreed to co-operate in the plan will lend to each group laboratory and cooking apparatus valued at \$100 and a reference library. The textbooks and lectures will be made so complete that each group can safely appoint one of its members as study leader to direct the work of the course.

When a group has decided to take up the work, the state which co-operates sends an agent with the department's representative to organize a simple class and assist the leader whom they elect in laying out the work and in showing him the best methods of procedure. The classes commonly are held from 8:00 to 12:00 in the morning and from 1:00 to 4:00 in the afternoon, two or three days each week. The sessions are not held every day, so that the members will have time to attend to their farm duties in between the sessions, as well as before and after the instruction period. The classes meet commonly at the most convenient farmhouse. During the morning hours, textbook work is done. In the afternoon laboratory work is conducted, and the women who have elected to take the domestic science courses have practical lessons in cooking.

As soon as a class is established, the state organizer withdraws to start a class in some other district. The work thereafter is left in charge of the leader, who receives assistance by mail from the college or the department in carrying on the work.

As there is no regularly paid instructor, classes can be carried on all over the state as rapidly as the college organizer can visit the groups, and as quickly as the laboratory sets supplied by the college become available. The local leader will preside during the reading of the lectures and references, for which full texts and lantern slides are supplied by the department. He will also be responsible for the laboratory equipment. Every one who completes the course will receive a certificate from the state college.

Not all of the states have yet agreed to co-operate in this plan. Last winter experiments along these lines were carried out successfully in Pennsylvania, and this has stimulated an interest in the method in other states. In one of the Pennsylvania classes more men applied than could be accommodated, and all of the 20 men and 15 women who began the course completed it. Pennsylvania is now arranging for more classes, while Massachusetts, Michigan, Vermont and Florida expect to take up the work. Other states such as Maine, New York, New Jersey and Delaware have signified their willingness to co-operate.

Ordinarily a college in a state usually applies to the department seeking its co-operation, when sufficient interest has been shown in the plan

in several communities where 10 or more people have sought the instruction. For financial reasons, certain colleges are not so able to engage in the work as are others.

The advantage claimed for the new home courses with local leaders and laboratory equipment over the ordinary correspondence courses is that only a small percentage of those who take the individual correspondence course finish it. Studying in a group, with laboratory work and a leader, seems to stimulate the interest and add a social feature which lead the members of the group to follow the work conscientiously and complete it. Experiments with free correspondence courses show that while many individuals gain advantage from them, many others, because the material is furnished free, do not feel the same obligation to complete them as they do when they pay a substantial sum of money for the instruction.

IMPORTANCE OF ROAD MAINTENANCE AND REPAIR.

There is no phase of the road problem more important than that of maintenance. The general impression that there are certain types of roads that are permanent is erroneous. No permanent road has ever been constructed or ever will be, according to the road specialists of the U. S. Department of Agriculture. The only things about a road that may be considered permanent are the grading, culverts, and bridges. Roads constructed by the most skillful highway engineers will soon be destroyed by the traffic, frost, rain, and wind, unless they are properly maintained. But the life of these roads may be prolonged by systematic maintenance. A poor road will not only be improved by proper maintenance but may become better in time than a good road without it.

The first and last commandment in earth road maintenance is to keep the surface well drained. To insure good drainage the ditches should be kept open, all obstruction removed and a smooth crown maintained. Except for very stony soil the road machine or scraper may be used very effectively for this work. The machine should be used once or twice a year and the work should be done when the soil is damp so that it will pack and bake into a hard crust. Wide and shallow side ditches should be maintained with sufficient fall and capacity to dispose of surface water. These ditches can in most places be constructed and repaired with a road machine.

All vegetable matter such as sods and weeds should be kept out of the road as they make a pongy surface which retains moisture. Clods are also objectionable for they soon turn to dust or mud and for that reason roads should never be worked when dry or hard. Boulders or loose stones are equally objectionable if a smooth surface is to be secured.

A split-log drag or some similar device is very useful in maintaining the surface after suitable ditches and cross section have once been secured. This drag can also be used to advantage on a gravel road as well as on an earth road. The principle involved in dragging is that clays and most heavy soils will puddle when wet and set very hard when dry. The little attention that the earth road needs must be given promptly and at the proper time if the best results are to be obtained.

In dragging roads only a small amount of earth is moved, just enough to fill the ruts and depressions with a thin layer of plastic clay or earth which packs very hard so that the next rain instead of finding ruts, depressions and clods in which to collect runs off leaving the surface but little affected.

The drag should be light and should be drawn over the road at an angle of about 45 degrees. The driver should ride on the drag and should not drive faster than a walk. One round trip, each trip straddling a wheel track, is usually sufficient to fill the ruts and smooth the surface. If necessary the road should be dragged after every spell of weather, when the soil is in proper condition to puddle well and still not adhere to the drag. If the road is very bad it may be dragged when very wet and again

when it begins to dry out. A few trips over the road will give the operator an idea as to the best time to drag. Drag at all seasons but do not drag a dry road.

The slope or crown of an earth road should be about one inch to the foot. If the crown becomes too high it may be reduced by dragging toward the ditch instead of from it. If the drag cuts too much, shorten the hitch and change your position on the drag. If it is necessary to protect the face of the drag with a strip of iron, it should be placed flush with the edge of the drag and not projecting. A cutting edge should be avoided as the main object in dragging is to smear the damp soil into position.

MINERAL PRODUCTS.

The Nation's output of mineral products of various kinds is a fair measure of industrial activity. For several months now the Department of Interior, through the Geological Survey, has been issuing its final statistics of the 1913 mineral production which confirms in detail the preliminary estimates issued early in January for the principal minerals. In the large majority of cases these authoritative figures tell in one way or another the same story of industrial prosperity. In coal production the increase has been general, and it is this very fact that serves as an unmistakable index of general health in the industrial world. But as state after state is shown to have had its banner year—West Virginia, Illinois, Ohio, Kentucky, Alabama, Virginia, Oklahoma, New Mexico, Montana, Texas, Utah, and Pennsylvania, in both bituminous and anthracite, the record becomes spectacular. Ohio for instance had its floods, yet there was a substantial 6 per cent increase in coal output, and the miners averaged more working days in 1913 than in 1912. Twelve other states showed increases from 3 per cent in Iowa to 12 per cent in Indiana and over 15 per cent in Washington, and only Colorado, Maryland, North Dakota, Nebraska, Idaho, and Missouri show decreased output, the Colorado labor troubles explaining the only significant decrease. In a similar way, the figures of coke production give large increases, and coke, it may be noted, is a step nearer the metal industry. Petroleum production in 1913 exceeded all records, an increase of 25 million barrels and 72 million dollars over the 1912 returns.

In metal mining, the iron and zinc mines had a banner year, while gold, silver, lead and copper showed a decline in many of the largest producing states. Structural materials on the other hand exhibit marked gains almost without exception. Thus 1913 was the banner year for cement, which gains more than 11 per cent over 1912, and record outputs are also shown for lime, building sand and gravel, sand-lime brick, and glass sand. Other mineral products for which 1913 was a record-breaking year, are bauxite and aluminum, sulphuric acid, feldspar, mica, pottery, and talc and soapstone, while substantial increases are reported for gypsum, phosphate rock, abrasives, barites, slate, and salt. These production figures all express well-maintained activity in mines, smelter, furnace, and mill and prove that the American people are utilizing more of the Nation's great natural resources than ever before. A few weeks later when figures are at hand for all of the mineral products, it is expected that 1913 will be found to have overtaken both 1912 and 1907 which have hitherto held the record.

DUNKLIN CO. (MO.) NOTES.

Editor Rural World: We are now passing through one of the worst droughts our country has had in many years. The drought last year seemed to have made the ground friable, and last spring it broke loose and was in excellent shape to plant. Farmers planted, and early stuff was an excellent stand. Everything indicated one of the best crop years we ever had. Stuff planted a little later, failed to come up so good. On the 9th of May, it stopped raining and the drought set in. For a long time our crops looked fine

our lands here are sub-irrigated. It is only 6 to 20 feet, generally, to water, except on Cromley's Ridge, which is only a small part of our county. This bed of water is drawn up by capillary attraction. It is claimed that water will rise by capillary attraction 15 or 20 feet. Some people cultivated shallow and dragged. Those that cultivated this way, had very fine prospects till lately. We have had one of the very hottest summers we ever had. For a long time the mercury stood at 100 to 108. July 15 and 16, it was 108. Then along with this hot sun, came hot withering winds, just drying and scorching. The last two weeks has played havoc with our crops. Much early corn is ruined. Cotton can stand lots of dry weather and it was doing pretty well till last few days. Now it is badly damaged and though we had a big melon crop and it promised to be fine, now the dry weather has nearly ruined that. Hay and oats were very short. Wheat was extra good. In a few localities in the county, they have had some little showers, and crops are fair. But the fact remains that our crops will be very short.

The great Little river drainage ditch is begun. It begins near Cape Girardeau and runs south 90 miles. It will drain half a million acres, and will cost about \$5,000,000. It will likely take five years to dig it.

Immense material progress is being made in Southeast Missouri. A great spirit of progress has seized the people. Better methods of farming, better stock, better schools, better roads and better society. The progress in 10 years has been wonderful. Ten years ago, few farmers took a farm paper. Now, there are only a few who don't take one or more. Farmers used to plow deep in dry weather and tear the corn roots, now more are cultivating shallow and dragging in dry weather. Immense progress has been made in the last five years in getting better stock. In fact, there has been a wonderful revolution in all lines of progress.

I had a 40-acre field that I put in corn this year. It had a lot of stumps in it. So I began in the spring and went before the plow, in lands, and blew out the stumps. The dynamite cost me \$80 and I estimated the labor, exclusive of team in hauling and pulling roots at \$40. So I was out in money about \$120. It produced a big change in the appearance of the field. Then we could make so much more headway in the crop. As the ground was rather low, by cracking up the hard subsoil, I estimated that in a wet year that I could grow enough more on it to pay cost of dynamiting. Land that is wet can be dried out a great deal by dynamiting. A friend who came from Illinois, tells me that up there, a man had a field that was very wet. He check-rowed it 50 feet apart. Then he bored down and put a stick of dynamite in every check and exploded it. Then that ground produced an enormous crop of corn. Another friend adjoining me, had two ponds that had water in them nearly all the year. He bored down and dynamited them and then he was enabled to grow crops on them. Over at Piggott, Ark., they dug a ditch with dynamite.

A revival meeting has just closed at Campbell in which the evangelists were girls. They are sisters, Daisy and Norma McCormick. They live in Wayne county. One is 23 and the other 25 years of age, and they have been in the work seven years. Norma, the youngest, does the preaching and Daisy leads the singing. They do fine preaching and singing. Both are fine musicians. They are polished, cultured young ladies and have preached all over Dunklin county and Southeast Missouri. The crowd was so big here that no church would hold it and a rich man in Campbell, W. D. Larswell, gave up his new theater to the meeting and it wouldn't contain the crowd that came. They preach the old gospel of repentance and holy living. Their singing is something wonderful.

R. C. YOUNG.

Correct.

The class in history had the floor. "Can any scholar tell me where the Declaration of Independence was signed?" asked the teacher.

"At the bottom, like a letter," promptly replied one lad.

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THERE are a thousand uses for this instrument in every home and on every farm or ranch. You can see what your neighbors are doing who live miles away from you. It will bring the remotest part of your farm to your door. You can tell who is in a carriage long before they reach you. You can view and count stock on distant parts of your farm or ranch.

POSITIVELY

such a good telescope was never offered in such a liberal manner before. These telescopes are made by one of the largest manufacturers of Europe; measure closed, 12 inches, and open over 3½ feet in five sections. They are brass bound, brass safety cap on each end to exclude dust, etc., with powerful lenses, scientifically ground and adjusted. Guaranteed by the maker. Everyone living in the country should have one of these instruments. Objects miles away are brought to view with astonishing clearness.

Used as a microscope it is found of infinite value in discovering microbes and germs in plants, and seeds, etc.

Heretofore telescopes of this size with solar eyepiece and multi-focal lenses, have sold for \$8 to \$10, or even more. We do not claim our telescope is as nice and expensive in every particular of construction as a \$10 telescope should be; that would be unreasonable; but it is a positive wonder for the price. Each telescope is provided with 2 interchangeable objective lenses—one for ordinary range and hazy atmosphere, the other for extra long range in clear atmosphere, increasing the power and utility of Telescope about 50 per cent.

Can Count Cattle Nearly 20 Miles Away.

F. S. Patton, Kansas, says: "Can count cattle nearly 20 miles away. Can see large ranch 17 miles east, and can tell colors and count windows in the house."

Saw an Eclipse of Sun.

L. S. Henry, The Saxon, New York, writes: "Your Solar eyepiece is a great thing. I witnessed the eclipse at the Austrian Tyrol when the sun was almost 80 per cent concealed."

Could See Sun Spots.

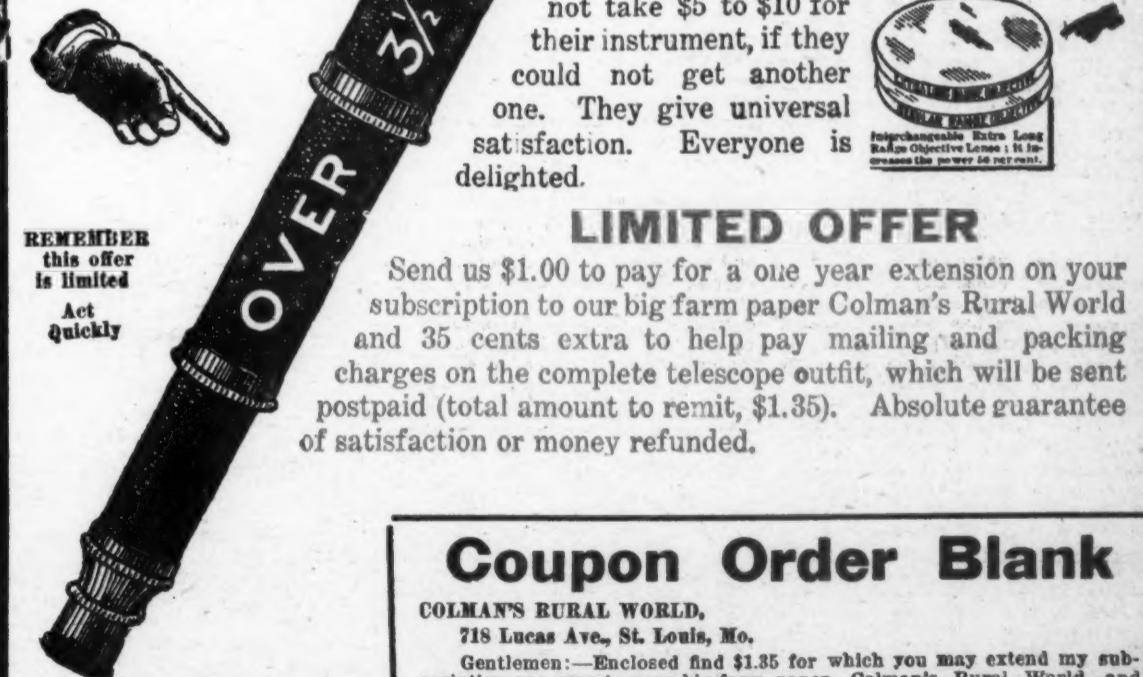
Rutland, Vt., Feb. 16, 1910.—Telescope arrived O. K. I have seen the spots on the sun for the first time in my life.—Dan C. Safford.

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Select the lady of your choice,
And one who has a cheerful voice.
The one that's pleased with all you do.
That's the kind o' girl for you.

See that no trace of jealousy
Is found in her, your wife to be.
For it would rob of peace and joy
And such a trait would you annoy.

And when you're married let the frau
Still wear a smile and sweetly bow
To gents and ladies young and old.
And such a wife's worth more than
gold.

P. S. And help the biz.

To Pick Out a Hubby.

Pick out a man who's kind and true,
The one that will work hard for you,
And give you 'nough to buy a dress
And save to keep you from distress.

When sickness comes there's doctors'
bills
And druggists must be paid for pills.
So the prudent man's the one for you
And you'll be happy with him, too.

Yes, pick the man who cheerfully
Will let you smile and kindly be
To those who come across your way,
And that's the kind of man they say.

For everybody'll say he's fine,
And is the best one in his line.
So the broad mind is of much avail,
But the narrow one is apt to fail.

When the pick's made and knot is tied
Be faithful and be satisfied.
Some fortune favors more than others,
But, for fifty years, you may be lovers.

St. Louis. ALBERT E. VASSAR.

WISDOM AND POWER OF THE DEITY.

Editor Rural World: To a careless observer the stars which adorn the ceiling of our terrestrial abode appear to have been launched through the spaces of infinity at random, and without any regard to order, but under careful telescopic inspection we learn that they have been grouped in clusters and linked together in such a way as to display the wisdom and power of the Deity to an extraordinary degree, but man, so far, has only been able to unravel but a small portion of the scene of universal nature, he has only made a partial investigation into the intricacies on the outskirts of the celestial kingdom. The most expert astronomical observer and mathematician that our world has ever produced, has only a smattering of knowledge of this wonderful science. There are comparatively but few persons who have any idea of the vast amount of machinery that is in use by those who are engaged in investigations of the sidereal heavens. Instrumental astronomy as now practiced has reached a wonderful degree of accuracy, but there is still room for much improvement in that and other directions.

In regard to the general arrangements of the systems of the universe, there is the strongest kind of convincing evidence that the stars are not dispersed as it were at random, in a kind of magnificent confusion, but that they are distributed systematically, in immense clusters, throughout the regions of infinitude. These great clusters are known as nebulae, and they contain within their limits legions of small, medium, large, and very large clusters, and these groups and clusters might be subject to numerous subdivisions and classifications, on down until we come to single, double, treble and multiple star systems. But terrestrial beings lack mental power sufficient for the solution of problems of such intricacy.

Let us select a star from one of the small groups mentioned above, and then let us make some investigations so as to learn something of the scale of magnitude of even the smallest star groups. A point of light in the firmament that appears like an almost invisible star to the unaided eye, which a moderate sized telescope shows as a small dim round speck, yet this object is found by powerful instruments

to consist entirely of stars to the number of from 10 to 20,000! What must be the distance of this object from the earth, when its stars appear to be blended and projected one upon another, hundreds of them appearing only like a lucid point, and yet the distance between any two of them is perhaps 10,000 times greater than that of Saturn from our earth.

Each one of these stars or luminous orbs must be considered as a sun, and it is about certain that each one of them is encompassed with a retinue of revolving opaque planets, to the number of perhaps 100, and it may be that their number is much greater than this. We learn then that a star which appears almost invisible to the unaided eye, is in reality a congeries of luminous opaque orbs to the number of much more than 2,000,000, and if those resplendent habitable worlds are peopled with intelligent natures as they surely must be, what must their number be?

Some scientists make a distinction between star groups and star clusters. A group is a collection of stars equally compressed in all parts, and the outline may be of any shape. Groups are much smaller than clusters, and there is no condensation towards the central points of such systems. Most clusters are of large size, and many of them present beautiful configurations that are of great interest and well worth observing and studying. The clusters are in most cases round, and this is an indication that there exists some general bond of union in the nature of an attractive force within their borders. There appears to be an intrinsic density far greater at the central points of clusters than there is at the surface. In the groups, the state of aggregation at the central points, is in general no more dense than at the surface of the mass of such bodies. The appearance of a cluster indicates the existence of a central force, residing either in a central body or in the center of gravity of the whole system.

Besides the immense numbers of star groups and clusters that are in plain view, great numbers of them are invisible to the naked eye, and can only be seen as systems, by the use of the most powerful telescopes. Telescopes of moderate power exhibit such objects as faint specks of light of cometary appearance without tails.

The Pleiades is a very conspicuous small group of stars, and it must be much nearer the earth than most others. In ancient times seven stars were plainly visible to the unaided eye in this group. Ovid, a poet who lived in the first century, states that in former times, there were seven, and it has been conjectured that one of them has long since disappeared. There are said to be a very few persons who have such great acuteness of vision that they can perceive 14 stars in this group with the naked eye. The stars in this group are not crowded, and with a telescope of moderate power, 100 or more can be perceived. Praesepe or the Bee Hive appears as a nebulous speck to the unaided eye, but with a small telescope it is resolvable into very minute stars.

Such star groups as these are among the smallest, yet in reality they are immense stellar systems, and although they are comparatively near the earth, yet they are situated at an immeasurable distance in the profundity of space. The contemplative philosopher might spend a life time of 10,000 years in studying and investigating the wonders of creation on one or these miniature stellar systems, and yet at the end of that period he would have a very imperfect knowledge of such sidereal groups. In stellar systems known as clusters, there are likely combinations of motion and sidereal arrangements of far greater complexity and sublimity than are to be found in group systems, yet in both classes of this kind there must be produced a great diversity of phenomena and effects. Suns revolve around suns and systems around systems, and planetary bodies in vast numbers circulate around central luminaries, and myriads of satellites encompass and revolve around their primaries, while comets in great numbers are moving through the interstellar regions of group and other systems, and yet such bodies as clusters are only infinitesimal portions of still greater clusters,

known as nebulae. What then must be the dimensions of these latter bodies? What a complexity of motions, perturbations, and other effects must necessarily follow among such astonishing scenes, yet under the superintending care of the Almighty Architect whose intelligence is infinite, everything moves onward in the most perfect order and harmony, without confusion.

It appears to be one of the plans of the Creator to reveal to man some of the wonders of celestial mechanism. He has therefore endowed certain men with a perspicacity of intellect, and with such a profound knowledge of everything connected with physical and mathematical investigations, and with such eminent skill in the science of analysis that man has been rendered capable of making some of the most difficult determinations in regard to the problems that appear while such bodies as double, treble, multiple and other star systems are being observed, investigated and studied. But there are certain things in connection with multiple and some other star systems that will baffle the skill of earth's most profound mathematicians, yet there will most likely be celestial intelligence dwelling upon other worlds of a far higher order of intellectual ability than terrestrial scientists possess, who will be able to make the requisite mathematical calculations, and, as I have said before, this circumstance affords a presumptive evidence that such superior intelligences actually exist in the universe, and that man, powers, may be in the act of training in the present improvement of his for the employment and the society of such intellectual beings in a future scene of existence. J. M. MILLER.

LOVERS OF FLOWERS.

Dear Home Circle, as my other letter entitled Home Circle Volunteer escaped the waste basket. I will call again. As Early Alice requests all lovers of flowers and home comforts to tell of our methods of securing these, her requests just suits me, for I am a dear lover of flowers, and home comforts, and I am a dear lover of birds and children also. I told the Circle in my other letter about helping my dear mother do her household and garden work. I raised more flowers than anybody else. I am 57 now, and I love flowers now just as much as I did when I was a boy, and my matron loves them equally as much as I do, and we have a fine lot of them.

I have a 19-year-old daughter who loves flowers, also my three little boys love flowers, but if my two elder boys love flowers they know it, but I don't. We have raised most all kind of flowers, but the most valuable and sweetest flower we had was a little girl. She was too sweet and too good for us and this world. When she was but eight months and 13 days old God sent his death angel and the angel plucked this tender little flower and tenderly carried it to a better world. This might seem cruel, but the same God who plucked this little flower gives us an opportunity to redeem it or in other words go to it. I can't think of anything that will make home more comfortable than children and flowers.

We ordered quite a variety of flower seeds from R. H. Shumway of Illinois. My favorite flower was the sweet pink. I raised them while I was a small boy. All of our neighbors have different varieties. Some of them have different varieties from our, so we get from our neighbors and they get from us. By doing this we don't have to buy so many. I think we can make our country homes more comfortable and cheerful than our city homes. Why? Because we have more of nature's comforts and blessings. We have the wild song birds to sing for us, we have various breeds of poultry and farm animals. We have the fresh vegetables, fruits, eggs, milk and butter. Of course, there are different ways of securing flowers and home comforts. First we should secure the right kind of seed if we want to grow a pink we must plant pink seed, not a thistle seed. Next important thing is to cultivate those plants. If we allow the thistles, briars and weeds to stunt them and they would produce nothing but little pale and puny flowers, we will have something that will not be much pleasure.

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ure or comfort to us, and visiting friends.

Well, what about our children, do they need cultivating? They are our little human plants. If we will cultivate them by keeping the cigarettes, whisky and other evils away from them. If we will give them the proper cultivation they will, no doubt, be a comfort to us and we will not be ashamed of them and not ashamed for others to see them. While if we neglect this cultivation and allow whisky, cigarettes and evil companions to blight their lives, we can't expect them to be anybody else. Our Home Circle can much comfort to us themselves or anybody else. Our home circle consists of myself, wife and six children, one daughter and five sons. Daughter 19 years old and sons' ages run from 10 to 21, and none of them use tobacco or whisky, and they are all industrious, hard working children.

I tell my wife that we have no right to complain regarding our children's conduct. My two oldest boys are spraying the orchard today, while my three younger boys are hauling rock. We have about 100 White Plymouth Rock hens, 16 ducks, 30 hogs, 8 horses, one young colt, four cows, 4 calves, a fine orchard, 39 acres of wheat, 18 of oats, 26 of corn and plenty of good pasture, and a good garden, and plenty of flowers. We attend church every first and third Sundays, attend Sunday school every Sunday at 10 a. m., and Endeavor every Sunday evening. Our church is in the country, three miles from our home. On church days we make three trips, which covers 18 miles, and on the Sundays when there is no church we make two trips, which covers 12 miles and we get good pay for our time. In our Bible school I am trying to teach a class of young men. I have an average attendance of about 20 each Sabbath, and I am trying to conduct the Endeavor meeting so you can know I have plenty of work to do, but enjoy my work. Nature is now dressed in her robe of green, red, white and blue. My health is bad, but I am glad I live in a country home, where we are blessed with nature's gifts, and on the green pastures watch the farm animals roam.

E. N. HENDRIX,
Farm Student and Information Seeker.

In building a hen house allow four or five square feet of floor space for each fowl.

Observing an unfamiliar shrub by a country roadside a student of botany stopped to make an examination. "Are you acquainted with this flower, young man?" he asked of a passing yokel. "Yep," the boy laconically answered. "To what family do you think it belongs?" Indicating a near-by house with a pudgy thumb

the boy answered: "Higginses."—Puck.

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FARMERS, ATTENTION—Wanted, location for seven \$150,000.00 condensed milk plants and twelve \$115,000.00 milk, flour and sugar plants. We sell no stock or bonds, nor ask for free site. Show us you have natural surroundings to develop into dairy country if milk prices are such to make it possible to do so at a profit. Send full information of your advantages, pictures of farms, publications, books, etc., to Herman R. Franzen, Ephrata, Lancaster Co., Pennsylvania.

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WILL PAY reliable woman \$250.00 for distributing 2,000 free packages Perfumed Borax Washing Powder in your town. No money required. W. Ward & Co., 214 Institute Pl., Chicago.

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FOR SALE—A choice 4-year-old registered Guernsey bull, with advance registry ancestry and 6 bull calves, sired by him that will be ready for service this fall; also, 7 high-grade heifers. Seymour A. Merriman, Ft. Atkinson, Wis.

BEES AND HONEY.

NEW EXTRACTED HONEY, two cans of 60 lbs. each, \$9.50, reduced price on 10 can lot. J. M. Ruyts, Carlsbad, New Mexico.

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BEST QUALITY new clover honey, 30-lb. can, \$2.45, two or more cans, \$3.30 each. Sample 10c. Price list free. M. V. Facey, Preston, Minn.

MISCELLANEOUS.

FOR SALE—Foxes and coons, skunks, minks. Address Spring Dale Farm, Box 38, Custer, Ky.

FOR SALE CHEAP—Ohio ensilage cutter No. 11, with pipe. B. L. Rochelle, Jackson, Tennessee.

NEW FLUFF RUGS, made of old carpet; sample free. Harding Bros., Cuba, Mo.

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INCUBATOR TROUBLES. My secret discovery hatches every good egg. No dead shell. Took me 15 years to learn the missing link. It's an eye-opener. No appliances for sale. Information free. Dr. Hopkins, St. Francisville, Mo.

COINS WANTED—I am collecting coins, and if you have dimes with initials N. O. A. R. D. X. S. or F. near edge under words "One Dime," write me stating what you have. I need several of each of these coins to complete my collection and will pay well to get them. M. Falkenstein, Sank City, Wis.

6 PER CENT MONEY, 6 PER CENT—Loans may be obtained for any purpose on acceptable Real Estate security; liberal privileges; correspondence solicited. A. G. Agency Company, 767 Gas. Electric Bldg., Denver, Colo.

Horseman

W. D. Lee is judging the saddle and harness horse classes at the Manitoba Exposition at Winnipeg, Can., this week.

The Inter-State Fair and live stock show at St. Joe is arranging for a big horse show next year in connection with their fair. They haven't sufficient stable room to put on the show this year.

Prof. E. A. Trowbridge, of Columbia, Mo., has been selected to judge at Minnesota and Kentucky state fairs. He will also judge for the Smithville Horse Show and the Iowa State Fair.

Chas. W. Green, of Centralia, Mo., who is superintendent of the light harness department at the Missouri State Fair this year, has been selected to judge the light harness classes at the Murfreesboro, Tenn., fair Sept. 8th-11th.

Sedalia, Mo., has a riding club which meets quite often and enjoys rides about that place in the evenings. Although the club has just recently been organized, there is quite a good number of members, both ladies and gentlemen.

The entire program offered by the big Muskogee, Okla., fair received a good entry and the following classes were declared to go: Two and three-year-old trotters, the 2:30, 2:19 and 2:15 trotters. The two and three-year-old paces, the 2:25; 2:14 and 2:11 paces.

Eight of the eleven events offered by the Jasper County Fair Association at Carthage, Mo., received a sufficient entry and are declared a go and they are as follows: 2:25 pace, 2:16 pace, 2:12 and three-year-old paces. The 2:25, 2:18 three and two-year-old trotters. The 2:14 and 2:11 trotters and free-for-all pace did not fill and are declared off.

The Sturgeon, Mo., Fair Association filled the following events: The two and three-year-old trotters; the 2:30, 2:25, 2:20 and 2:16 trotters. The three-year-old, 2:25, 2:18, 2:20, 2:15 free-for-all paces. The meeting is Aug. 4th, 5th, 6th and 7th, and Sam Spellman is the secretary, and he is ably assisted by Dr. McComas, Watt Harris, Mr. Dinwiddie, etc.

MANAGEMENT OF THE FARM WORK TEAM.

On every farm there is what is termed the work team, that is, the team which does the leading work throughout the year. The young horses are on pasture, and the extra work animals are turned out after the busy spring season, but the farmer has use for a team in some way nearly every day of the year and he usually has a good steady team for this purpose. This team is kept in the stable most of the time while the other animals are turned out to grass, where they will do all right without much attention on the part of their owner; but those which are kept in the stable and worked every day demand more care. What every farmer should do is to keep the work team comfortable, to feed properly and to keep it in good shape, says American Cultivator.

Every horse demands a certain amount of attention, but when he works he needs better care than at other times. The work team does not get the same chance for grass as the other horses, and consequently one needs to be more careful about feeding, for grass is nature's feed and remedy and keeps the whole system in order. The horse that works practically every day in the year needs good feed. He needs feed that will give him strength and energy so that he will feel like work. Feed him so that he will feel that way and he will do more work on less feed.

We have observed that it is the policy of many farmers to make a heavy reduction in feed allowance for the horse when he is idle, and increase as work thickens—a kind of sliding scale that is neither just to the horse nor in keeping with sensible

feeding. That the horse at hard work requires more feed than the idle one goes without saying, but when he is idle is the very time to store in the energy of the horse that power of endurance which he may draw on heavily when put to hard work. As a means of also conserving the best health of the horse the liberal feeding of him at rest cannot be too highly recommended. The horse does not plow tomorrow from the feed he eats today, but he plows from the storehouse of his energy, his vitality, the waste of which is supplied in a measure by the feed of today, and the feed of tomorrow while he is plowing.

The digestive ability of a horse must be remarkably developed and active if he can eat and assimilate each day sufficient feed to restore all the waste of hard work, day after day. Unless he can do so, his strength wanes, and to fortify the horse against serious damage by this work tax, the careful feeder will have anticipated the work demand by having a good reserve force created by previous feeding.

It should be understood that too heavy feeding while the horse is at hard labor may be detracting from his working ability inasmuch as he has the additional burden of an overworking stomach.

What we want to learn is how to feed and care for horses so that they will be the most active, able to do the most work, and be in the best condition possible on the least feed and at the least expense. Most farmers understand that oats are the best horse feed of all grains, but sometimes oats are too expensive for the purpose.



CHAMPION STATE PIG RAISER.

Corn makes a good substitute for part of the oats in a ration. It is a more fattening feed and has not the energy producing powers of oats, but can well be substituted for one half or one-third of the oats with very good results.

Bran is another very good horse feed. It is of a high protein content and keeps the bowels in good condition.

For roughage, good clover hay, free from dust or mold is just as good as timothy, but as a rule our clover hay is so dusty that timothy is generally used. Dusty hay should always be avoided. A light sprinkling of water will easily remedy the difficulty if it has to be used. Straw is also good roughage, the oats straw ranking first. Fodder corn and shredded fodder make excellent food in winter.

Some people think that if plenty of good oats, or corn and hay are on hand, that it is all that is needed for work horses, but this is not true. A horse needs a variety of food the same as man; there is great dietary value in variety in any ration. The best plan, however, in making up a ration is to choose such feeds as will give the best results most cheaply.

Feed does not cover the whole subject of care. Sweat on the horse should be removed daily; the horse that spends most of his time either in the harness or in the stable has no chance to rub dry sweat off. Daily use of the curry comb and brush should be practiced; every morning remove all dirt and sweat that has dried fast to the hair. These impurities of the skin must be removed.

Sweating is nature's way of casting out impurities, and so it is good for the horse to sweat, but he should be looking right when hitched up each morning.

All horses will do better for an abundance of exercise. Many good animals are ruined every year by over feeding and lack of exercise. They should be kept in light, clean and well ventilated stables, but whenever possible turn them into pasture field or lot, even if for only an hour or two; the exercise thus obtained will be of great benefit to the animals.

THE FARM HOME AND THE FLIGHT TO THE CITIES.

"Every farmer who owns his farm ought to have running water in his kitchen and a bathroom in his house, and those who do not own them should have these necessities supplied by the owners," says Mr. A. C. Eble, a business man of Dallas in talking recently to his neighbors in a farming community near Canton, Ohio, the occasion being the Eble reunion, when about three hundred relatives and connections of the family came together, and his remarks apply to conditions in Texas as well as in Ohio.

"A reason why young people leave the farm as soon as they are able is that they are very much less happy there than they might be if a little consideration on the part of their parents were shown them. The reason so many farm wives are old and worn out before their time is that they do so much work every day that a

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spare the money necessary for a windmill and water system that would save his wife two thousand pounds of lifting every day—especially as the piped water for the live stock would save him enough time in a year to pay for the whole plant.—Texas Industrial Congress.

TEN COMMANDMENTS.

1—Thou shalt feed the soil; otherwise the soil cannot feed thee.

2—Thou shalt be careful in the selection of the seed thou plantest, for in this depends much of thy success.

3—Thou shalt take interest in thy work; for no good results can come from an indifferent disposition.

4—When thou borrowest from thy neighbor, thou shalt return the same promptly and in good condition.

5—Thou shalt at all times be kind to thy horses and all thy stock.

6—Thou shalt keep thy machinery well oiled while in use, and sheltered from the weather when not.

7—Remember thy man-servant and thy maid-servant are human; and should be treated as thou, thyself, wouldst be treated.

8—Thou shalt treat thy wife and thy children with such respect that they will not wish to leave the farm.

9—Shun not the wisdom of others in practical farming, for thou cannot learn too much in thy occupation.

10—Remember the Sabbath day is a day of rest; and aside from doing the necessary chores, is not one for fixing fences.

COMMUNITY MARKETING.

Co-operation in marketing and in buying is, we believe, essential to the economical distribution of products. Large quantities of uniformly good products can be sold much more advantageously than can smaller quantities of products, each sample of which may be good in itself but which when brought together are not uniform. When every farm was manufacturing its own butter, and each of the hundred or more farmers in the community was trying to sell butter of a different quality, the price of butter was comparatively low. Where butter is manufactured in one plant, the manager of the creamery has at his disposal large quantities of a uniform product and can sell at the best possible price.

If the products of a community, such as grain, potatoes, and live stock can be made uniform by co-operation among the members of the community in production, and then these larger quantities of uniform products can be sold by one man, the same advantages that come to the large farmer, or have come to the dairy industry, can be secured in other enterprises on the farm.—A. D. Wilson, Director of Agricultural Extension and Farmers' Institutes, University Farm, St. Paul.

ARKANSAS NOTES.

Editor Rural World:—As it has been some time since I wrote, I will write a few items today.

It has been quite dry here until last week, but we have had plenty of rain since then to do for some time. It is too wet to plow.

Rye and oats was good; all put in the barn. Alfalfa field looks fine; been mowed once. The neighbors are watching results. Some seem to think alfalfa won't grow here in the mountains.

We aim to sow some sweet clover next spring if nothing prevents.

We have half crop of peaches, but there is not many anywhere else around here.

Apples only half crop. Plenty of different kinds of berries; also plenty of vegetables.

Stock is doing fine.

SARAH L. SPEARS.

Redstar, Ark.

GET AT THE DAIRY BUSINESS RIGHT.

If a man aspires to be a dairyman in every sense of the word he must keep only well-bred dairy cows, and care for them as such cows should be cared for. This is a fact conceded by every dairy expert in the country. Every dairyman who has gone into the business in the right way has done well and is receiving handsome returns.

But this fact has also led many dairy authorities to go out and preach the highly bred dairy cow to the farmers in general. They have evidently overlooked the fact that farmers, as a class, are not dairymen, nor are they likely ever to become dairymen in the true sense. They are diversified farmers, carrying on the business of milking cows as a side issue. While fully appreciating the profits to be derived from carrying on the dairy business wholly as a business yet it cannot be contended that all farmers would be wise to turn right over to exclusive dairying. Many would make a mistake by doing so, for, lacking the necessary qualifications which only a more or less extensive period of experience can give for dairying on a large scale, more would fail than would succeed.

If the average farmer is to become a successful dairyman he must in the majority of cases learn the business by degrees. There may be exceptional instances here and there where all the surroundings are so favorable that even the most inexperienced man could make a "go" of dairying right from the start, but the average farmer need expect no such results to attend his efforts. So before he indulges in any rosy dreams, and before he invests any large sum of money in high priced cows and elaborate equipment, he would better take the common cows he has on his farm, and by careful breeding and selecting let him breed his herd and his knowledge of the business up to the point where he can make a success of real dairying.

A few dairy authorities are beginning to see that this is the true course for them to pursue if they wish to develop successful dairymen out of farmers who have never considered the production of market milk, or cream, or butter, other than as a minor part of the farming operations. The average farmer must first be urged to take a little better care of the cows he now has; to feed them a little more regularly and on better feed, to sell off a scrub cow occasionally and let some good heifer take her place. This is practical preaching, because of the fact that if a man can be induced to make a small improvement in his herd and in his methods this year, he is apt to make a still larger improvement next year, and so on. As he begins to make these gradual improvements he will see for himself that it pays, and he will want to go on making still greater improvements.

Vanilla Sauce—One pint milk, yolks of 4 eggs, 2 tablespoons sugar, 1 tea-spoon vanilla. Put milk in a double boiler to boil. Beat yolks and sugar together until light, then add them to the boiling milk; stir over fire two minutes; take off, add vanilla, put away to cool.

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The complete set of dishes contains 33 pieces.
6 Dinner Plates.
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1 Large Meat Platter.
1 Large Cake or Bread Plate.
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Famous Rose Decoration.

The beautiful, dainty American Beauty Rose decoration is the most popular design ever offered our readers. The bright red roses and the rich green foliage stand out clear and brilliant in the center of each piece, and to make the effect even more charming a rich gold border of gold is run around the edge of each dish, thus giving the complete set an individuality and attractiveness not found in other dinner sets.

Will Last For Years.

The dishes are made of pure white ware, and are for hard usage as well as beauty. They are stronger and bigger than most dishes and with ordinary care will last for years. They will not glaze or get streaky like most dishes and the rose and gold decoration is burnt into each piece and will not wear off.

You could not wish for a more complete set of dishes than this—33 pieces.

Made by a Famous Pottery.

Any woman will be proud of our famous American Beauty Rose set which is complete and beautiful. They are for every-day usage as well as for Sundays, and are the product of the famous Owen China Company, of Minerva, Ohio. We guarantee them to be genuine Owen Chinaware.

OUR EASY OFFER

The coupon starts everything. Sign it and we will send you a large illustration in colors, showing this beautiful Dinner Set with its handsome decorations of red, green and gold.

We will also send you a sample needle case, containing 100 different needles for every purpose, and 15 darners, bokins and large needles—a total of 115 needles.

Our Dish Plan Is So Very Easy.

When you get this handsome needle case I want you to show it to 16 of your neighbors and friends and get them to hand you 25 cents each in connection with a special offer I will tell you about when I send you your needle case. When you tell them about our great offer they will thank you for the opportunity to help you. Each person who hands you 25 cents is entitled to a complete case of these famous needles. I will send the needle cases to you so you can hand them to your friends when you tell them about our offer. In addition to the needle case each person also gets a special subscription to our big farm paper.

You Will Be Surprised.

You will be surprised how very, very easy it is to get this set of dishes. No previous experience is necessary. When you get your dinner set you will be delighted and all your friends will envy you.

It is so very easy to get this set of dishes that many of our readers earn two, three and even more sets, and sell the extra sets to their friends at a big profit. Now, if you haven't already signed the coupon below, do so before you forget about it.

Sign the coupon—it starts everything.

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Our plan is full of SURPRISES and LIGHTS for those of our friends who are willing to lend a helping hand at spare times.

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I want to get a 33 piece dinner set and the 41 extra gifts. Send me the sample needle case, picture of the dishes in color, and tell me all about your big offer.

Name

P. O.

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From the Producer To the Consumer

WHAT HAVE WE GAINED IN THE OZARKS BY CO-OPERATION IN THE SHIPPING OF OUR FRUITS?

Away back in the early eighties, when I first became acquainted with the Ozark region of Missouri and Arkansas, the fruit growing industry was in what we would now consider a very primitive stage of development.

It is true there were orchards of peaches and apples scattered throughout the entire area. Some of them were well kept, and considerable fruit of excellent quality was being produced. Occasionally one would find a small patch of strawberries, blackberries, or raspberries that was yielding an abundance of good fruit, thus demonstrating the possibilities of this region, when careful and intelligent cultivation was employed. Here and there an immigrant from one of the European countries had planted a vineyard, and was producing grapes as fine and as plentiful as ever grew on the sunny slopes of the native land.

But the general impression seemed to prevail that fruit-growing on a large scale was unprofitable. It was noticed that strawberries, after producing one or two crops, became unfruitful. Blackberries and other small fruits would not survive a long haul, and the local markets were soon over-supplied. No one seemed to know what to do with the surplus of apples and peaches. Wine presses, cider mills, vinegar plants, fruit evaporators and even brand distilleries were installed, but still the situation was not relieved. Tons and tons of excellent fruit were wasted or fed to hogs each year, because there was no one to consume it. The cry of over-production was general, and the fruit industry languished.

But this state of affairs could not long continue among a people such as inhabited these hills and fertile valleys. This was a population brought together from every land and clime. Among them were men who had gained position by wresting their substance from the virgin soil, and by subduing the primeval forest. They were accustomed to overcoming difficulties and not being conquered by them. They were of the old pioneer stock, whose course lay ever forward, and they never turned back.

They said, "This will never do. There is too much wasted energy. Thousands of people in the great cities, and all throughout the land are hungering for our fruit. They need it. We must get it to them. We must get together for mutual advancement, and devise a plan whereby we may reach those distant markets."

And thus, out of travail, was born the spirit of co-operation among the fruit growers of the Ozarks.

All throughout the region, small bands were gathered together and organized into associations, which were provided with efficient heads and were well managed. Fruit packages were provided, and a system of packing and grading the fruit was established. The educational side of the problem was not neglected, and better fruit was produced. It was discovered that certain varieties of strawberries require a mate in order to perpetuate its kind; that orchard pests demanded strict attention; and that too much wood is not good for a fruit tree. The railroads were interested, and readily entered into the spirit of advancement by providing better transportation facilities. And, for a time, it seemed as though the problem had been solved.

But, alas! Co-operation had not yet surmounted every difficulty. Men caught the fever everywhere. Large areas were planted in orchards. Great fields of berries and new vineyards suddenly sprang into existence. The world awoke to the fact that this is one of the grandest fruit producing regions in existence. Where once there were wagon loads of apples, peaches, berries and other fruits, now there were carloads and trainloads. These were hurried away to the great market centers by the different associations, without consulting with any other association, and often without

knowing whether the market really demanded so much fruit or not. The inevitable came to pass.

The great markets were deluged. The commission men strove valiantly to get behind the movement and relieve the situation, but they had no means of being reliably informed as to the extent of the crop they were expected to handle, and they were literally covered up with a supply of fruit for which they had not provided an outlet, and many times did not really know it was coming. Much fruit was shipped at an actual loss, and very little at a profit that would justify a continuation of the business.

Once more the plucky fruit grower of the Ozarks was confronted with failure. The years of toil and privation had been in vain.

But once again the sturdy yeomanry of the Ozark uplift demonstrated its ability to reproduce itself, and to conquer difficulties.

Up from the rank and file came another set of men. Men of broad intellect, wide experience and unimpeachable integrity. They, also, were accustomed to overcome the difficulties incident to labor and toil. They said to the downcast fruit grower: "My brother, we see your trouble. We understand. We have a plan. There is a way. We, also, are growers of fruit. Let us come over and help you."

They were welcomed, and the fruit industry was saved.

They went about and gathered the local associations together under one head, strengthening those that were weak, and building others where none existed before.

They systematized and standardized the packing, grading and loading.

They secured the co-operation of the transportation companies.

They brought to us the assistance and advice of the agricultural colleges and experiment stations.

They stood for the right and condemned the wrong.

They went into all the markets and, by their honesty, fair dealing, and sturdy character, commanded the respect and admiration of shrewd and critical men of business, and brought the buyer and the grower together on a common level.

They placed our representatives in all the leading markets, and secured for us a just and equitable distribution of our fruit that is satisfactory to all parties concerned, and at a cost that is wonderfully economical.

They were maligned, abused, and condemned. They were haled into court and persecuted.

But they, also, were the sons of the everlasting hills, whose spirit ever beckoned them upward and onward, and they persevered, until they have brought together, under efficient management and control, one of the most systematic, fairest and most satisfactory fruit sales agencies in the world. An organization which has stood the test of time, and whose influence for honesty and square dealing is felt and respected wherever fruit is marketed, and which inspires the trust and confidence of the fruit grower as nothing has ever done before. And it is peculiar to the Ozarks.

The people of the Ozarks made it, and it is theirs.

Under the system of co-operation, the fruit grower has prospered. Where once was the neglected farm and the hovel of poverty, one will now see beautiful and commodious homes, fitted with all the modern conveniences, and surrounded with every evidence of culture and refinement.

Where once were farms covered with mortgage, you will now find them covered with fruit and growing crops.

Great roads are being built, and the town and country are being brought closer together.

Around it all, and above it all, is that air of general prosperity and contentment that fits so well to the genial, great-hearted, God-fearing people of the Ozark hills.

And so may it ever be. The end is not yet. There is much that remains to be done.

May the sturdy yeomanry of the

flint-ribbed hills, the fertile valleys, and the quiet dells, ever go forward, hand in hand, recognizing every obligation that is just and due in the brotherhood of man, until every consumer, in every land, is brought to know and to bless the fruit that ripens so profusely. —F. F. Starcher, Neosho, Mo.

CO-OPERATIVE MARKETING OF FARM PRODUCE AND THE CONSUMER.

The prime requisite of organization for the improvement of marketing farm products is their standardization, declared E. M. Tousley, editor of Co-operation and secretary of the Right Relationship League of Minnesota, in an address before the Second National Conference on Marketing and Farm Credits.

In this way either organized or unorganized consumers in the large cities may know where to secure these products and expect to find them up to a uniform standard grade when delivered. All such organizations of farmers may effect economies.

(a) By organizing the milk supply on a co-operative basis, so that some of the profits may be secured for the farmers.

(b) By establishing co-operative butter and cheese depots in suitable districts.

(c) By establishing co-operative egg and poultry depots for sorting, grading, packing, and shipping.

(d) By grading and packing fruit in order to place it on the market in a fresh and attractive condition and in a market which is not already glutted.

(e) By organizing co-operative markets to reduce the cost of disposal and to break down the rings formed against the producer.

(f) To reduce the cost of transport by bulking consignments and by arranging terms with the railway companies and other carriers and to open up remote rural districts by motor traction.

Many of these principles have already been put into effect both in this country and Europe. The best examples are those of the California Fruit Growers' Exchange for the ci-

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Name.....

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Two fruits of that state, and the Northwest Fruit Growers' association of Hood River, Oregon. Many other similar organizations might be named, some successful from a financial point of view, but many others which have not been successful.

Were I speaking solely in the interests of that great staple class of our citizens, the farmers, I might go on and show in detail how such associations are organized and operated; how the improved quality of the product when raised and packed to grade increases the farmers' income; what savings are effected by cutting out the middleman's commission here and there when the farmers' co-operative organizations employs its own agent; and how better prices are obtained when this uniform product is shipped into markets where there is a good demand instead of to those markets which are already overstocked. Any one who will carefully read the proceedings of the 1913 meeting of this conference, or the many bulletins, pamphlets, and books which have been published along these lines, can easily familiarize himself with all these details and their attendant benefits. Like all other information, however, the reading of them will do no good unless the ideas are translated into action, and this must be done by the farmers themselves.

A friend of mine who had a certain ailment once told me that he had read a certain medical book which advocated a cure of his ailment, but that after reading it he felt no better than he had before. Similarly it will do no good to read about these co-operative organizations and their principles, unless they are practiced. The trouble with the whole question of marketing or distribution of food products is that these organizations of producers are attempting to solve the whole problem of distribution without due consideration for the consuming end. It matters not how perfect a farmers' marketing organization may become if that organization simply lands its product in the hands of the commission men or brokers of the large cities, which still leaves two or three middlemen between the product and the people who are to consume it. Under these conditions the improvement of the quality of the product but increases the price to the already overburdened consumer. I liken this situation to a farmer who has a large setting of wheat stacks to thresh. An efficient threshing machine is located beside the stacks, and a few rods distant is located the engine to furnish the power. Those wheat stacks may stand there until they rot down unless a connecting belt is placed between the engine and the threshing machine. If this connecting belt is owned by a monopolist or a system of monopolists which will not allow it to be used until the farmer pays the price asked for its use, you all know that the price will be high enough—"as high as the traffic will bear."

The situation relative to marketing farm produce, and manufactured commodities as well, is thus very aptly illustrated. We might liken the farmer and his produce to the threshing machine and the consumer in the city to the engine, but so long as the connecting belt—the actual machinery of distribution, the commission warehouses, the wholesale and retail stores—are owned and operated by a monopolistic system which charges "all the traffic will bear," just so long will there be no adequate relief to either producer or consumer.

In looking up data for this paper, I have searched high and low for information from others on proposed plans for the adequate marketing of farm produce with a view to ascertaining if any of them contain suggestions to adequately meet the above situation, and must confess that I have been unable to discover any such suggestions. In this search I have gone over the plans of the agricultural organization societies of Europe, the proceedings of this conference for last year, the publications of the American Academy of Political and Social Science, and of the larger farmer organizations of this country and innumerable farm periodicals, besides the bulletins and reports of the various departments of the government at Washington and of the agricultural colleges of the sev-

eral states.

In this survey I have found three general plans most frequently mentioned:

(1) Farmers' warehouses where it is proposed consumers shall come and buy direct.

(2) Municipal markets, also where consumers are to come and buy direct.

(3) Parcel post, wherein it is proposed that shipments of farm produce shall be made direct from the farmer to the consumer.

While the above plans have and will undoubtedly accomplish much in aiding the farmer in securing better prices, I am of the opinion that none of these methods is adequate for the solution of the tremendous problems confronting both producers and consumers in the establishment of the most economic method of distribution, which shall finally become permanent.

These methods are open to one or all of the following objections:

(1) Unregulated supply.

(2) Modern modes of living in cities make it most inconvenient and uneconomical for consumers of the larger cities to go to any one place in the city to buy direct.

(3) None of these methods provides for the distribution of produce shipped from a long distance or from foreign countries.

(4) Each and every one of these plans contemplates individual bargaining between seller and buyer and we all know from long years of experience that such bargaining eventuates in one side or the other getting the advantage.

(5) These plans provide for no established grades.

(6) These plans would result in building higher and higher the wall

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department store buying direct, receiving direct and selling direct, be accepted as the best economic type, and that retailers, wholesalers, and private organizations move toward the development of such stores."

CO-OPERATIVE ELEVATORS IN WESTERN CANADA.

In compliance with the demands of the powerful Grain Growers' Association the Manitoba government adopted the scheme of provincial ownership in 1910. The government bought 170 country elevators, and operated them for a year at a heavy loss. These elevators are now operated under lease by the Grain Growers'



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of class distinctions. The farmer and his organizations would constantly demand a larger and larger share of the supposed savings effected by direct contact with the consumer; while the consumer, if still unorganized, would still be at the mercy of the monopolistic ownership of the connecting link by the farmer in place of some other middleman being the owner.

In the report of the committee on markets, prices and costs of the New York State Food Investigation commission, issued August 1st, 1912, we find "that the present retail cost of food in Greater New York is in excess of five hundred million dollars a year, and that 10 per cent to 20 per cent of that sum can be saved in cost of handling.

"That the cost and profit of wholesalers averages 10 per cent on the cost at the terminals; the cost and profit of the retailers' and jobbers' totals average 33 1/3 per cent on the cost to them. That the total addition to cost by distribution in New York is at least 40 per cent, and probably 10 per cent less in other cities.

"That 'package' goods average 40 per cent more than the same in bulk; that the trading stamp adds three per cent to the cost; that delivery adds 10 to 15 per cent to the cost of operating small stores, and 5 per cent to the large stores; . . . that the failure to secure good prices and fair treatment for producers is a serious injury to our food supply.

"That the large retail unit or food

Grain Company, the farmers' terminal marketing company of Winnipeg.

The Saskatchewan government dealt with the problem differently. It appointed a competent commission to study the situation. This commission advised against government ownership and in favor of a centralized system of farmers' co-operative elevators to be controlled by the farmers, but built with the aid of government loans. This scheme was adopted and the Saskatchewan Co-operative Elevator Company Act was passed in March, 1911. It provided that local associations of stockholders should be formed and that when such a local association had paid in 15 per cent of the cost of an elevator, the provincial government should loan the remaining 85 per cent—this loan to be repaid in 20 annual installments. The rate of interest is only 5 per cent.

The farmers of Saskatchewan lost no time in taking advantage of this law. They immediately organized their central and local associations, and started to build 40 elevators, which were put in operation in the fall of 1911, within eight months after the law was passed. In 1912 they had 137 elevators, and during the past fall, 192 elevators. According to the last report there were 13,156 stockholders, all farmers, and the subscribed capital was \$1,818,000. In the year 1912-13 the company marketed 12,900,000 bushels of grain, and made a clear profit of \$168,000. On

July 31, 1913, the government loan stood at \$1,206,000.

The province of Alberta followed the example of Saskatchewan, and passed an act providing for the incorporation of the Alberta Farmers' Co-operative Elevator Company in January, 1913, only a little over a year ago. By the first of September, organization had been perfected, and 50 elevators actually built and put in operation, in time to handle the 1913 crop. The government loan amounted to over \$300,000 in April, 1914—L. D. H. Weld, Agricultural Economist, University Farm, St. Paul.

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Our offer makes it so easy to get one or more of these useful presents that every boy or girl, man or woman reader of Colman's Rural World should sign the coupon below. All we want you to do is distribute 20 of our swell Art and Religious pictures amongst your friends and neighbors at 10 cents each. These beautiful pictures are 12x16 inches in size, and lithographed in many beautiful colors. Nearly everybody you show these pictures to will thank you for the opportunity of getting one or more at 10 cents each. As soon as you have distributed the 20 pictures, send us the \$2.00 you will have collected and we will send you your choice of any one of the presents you select from our big list of premiums.



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This Camera outfit includes camera with automatic shutter, plates, developing tins, developer and fixer and full instructions. Will take clear and sharp pictures. Covered with moroccoette.

Vanity Case

Made of rich German Silver which has an extra finish, and is decorated with fancy flower border. This case has a mirror of good quality, and powder puff compartment and places for quarters, dimes and nickels, also a strong catch that will hold cards and bills. Attached to this Vanity Case is a ten-inch chain. Size of case is 3 1/2 x 2 1/2.



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